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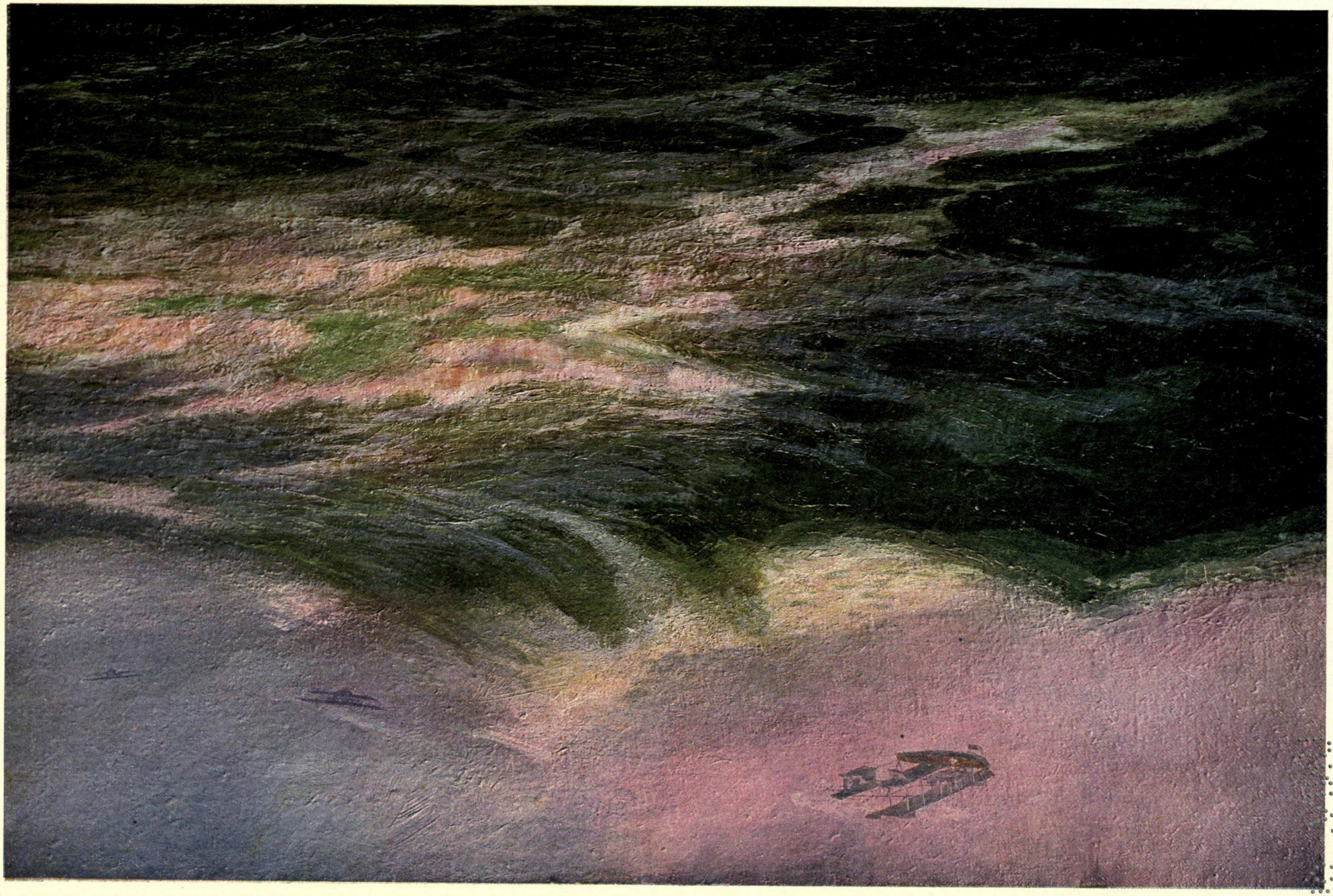

The Flight Across the Atlantic

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19-11898

Issued by the Department of Education
Curtiss Aeroplane and Motor Corporation
New York City
1919

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gift

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UNIV. OF
CALIFORNIA

I—Arrival

A FAINT but penetrating hum grew in the sunset over Lisbon. It was an alien sound to the old city beside the Tagus. It seemed to have no location, but to diffuse itself through the sky, growing in volume and intensity.

Suddenly with a jet of steam the *U. S. S. Shawmut* and the *U. S. S. Rochester* sent a shrilling answer.

"There she is!" came a voice, cutting the great spaces like a thin ray of light.

Sirens, guns of Forts San Julian and Bugio, cannon of Portuguese warships, and the shouts of innumerable men on land and water echoed from wall to wall of the natural amphitheatre. A silhouette became visible against rosy banners of cloud. It gathered definite shape, the noise of its motors became loud and thundering. With a gleam of wings the NC-4, completing the first flight ever made by men across the Atlantic ocean, dove in a wide spiral toward the river and came to rest upon it as lightly as the vessel of a dream.

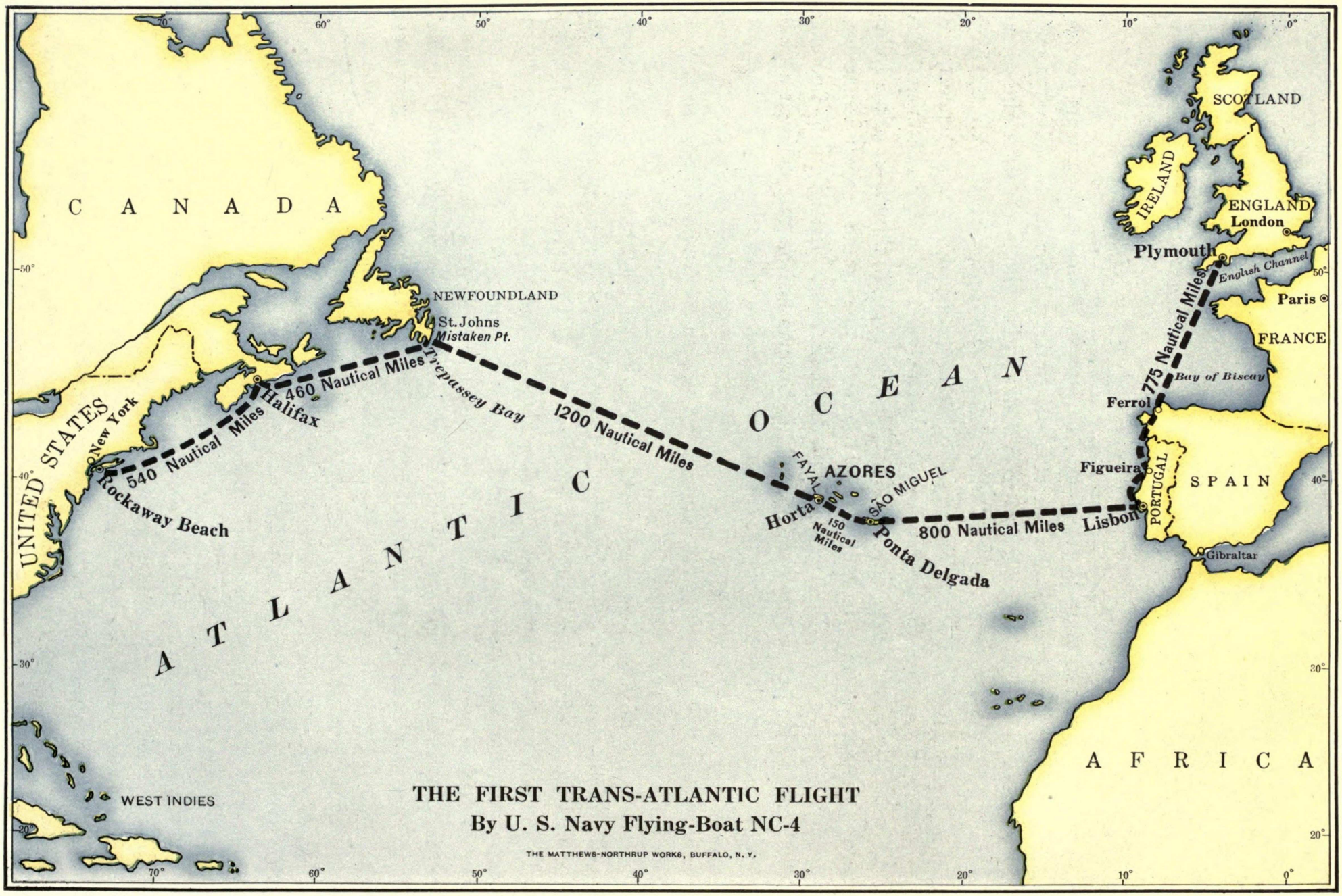
There was a moment's pause.

Lisbon, lying in the black and gold of a dying May 27, 1919, seemed to ponder on the achievement. Did an intangible sadness, a regret, tinge the moment for her? Once she had her heroes and her navigators. Somewhere, among her terraced hills and her half a million people, walked the ghosts of John the Great, Vasco da Gama, Cabral, Prince Henry the Navigator; of Amerigo Vespucci, even—name-giver to a new continent. And here, in 1709, in the Palace of the Indies, occurred one of the earliest aeronautical demonstrations. Bartholomeo-Lourenco de Gusmao had on that day sent a globe to the ceiling of the Hall of Ambassadors before the assembled court—a ball "borne up by certain materials which burned and which the inventor himself had ignited." Where were the explorers now? Where were those who inspired to conquer the air, to fulfill Gusmao's promise of a "machine competent to journey through the air faster than over land or sea, to carry messages five or six hundred miles a day to troops, and even adequate to explore regions about the poles?" They were there, but they were invaders. They awakened Portugal from a dream, shattering her peace with the thunder of their engines and the flash of strange and amazing wings.

A voice broke the silence.

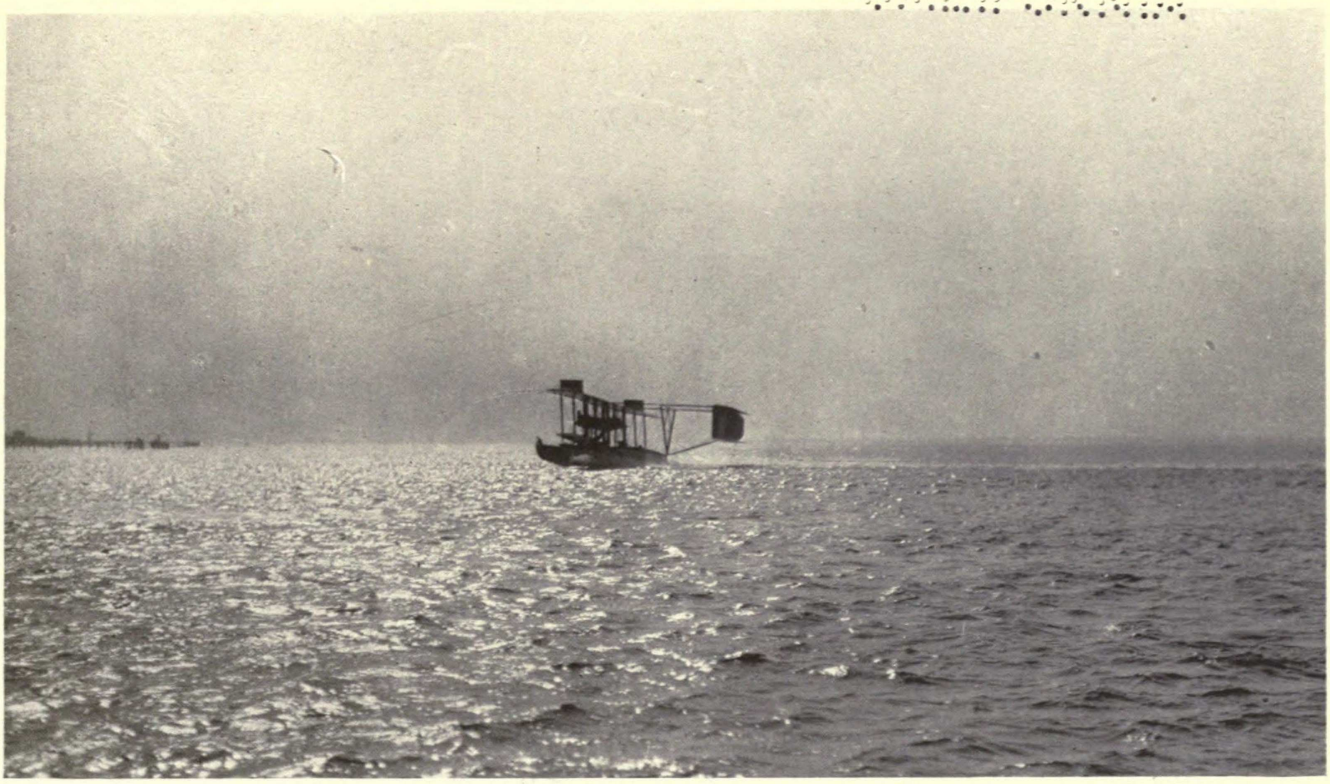
"Tell the *Shawmut* to direct her searchlights westward into the wind, so as to shine upon the water."

A sword of light swung into the dusk and found the NC-4. She taxied toward the *Rochester*. A motor boat from the



THE FIRST TRANS-ATLANTIC FLIGHT
By U. S. Navy Flying-Boat NC-4

THE MATTHEWS-NORTHRUP WORKS, BUFFALO, N. Y.



A Trial Flight in the rays of the setting sun

Shawmut, hovering in wait, took off the crew. They went up the *Rochester's* gangway, smiling men whose faces were tinged with the gray of a long-sustained and nervous effort. Commander J. H. Towers, U. S. N., officer in charge of the Navy-Curtiss flying boats' expedition, grasped their hands. Admiral Plunkett, U. S. Minister Birch and Portuguese officials stood there to receive them; the white and colored dresses of civilians and soldiers glittered under the searchlights.

Tumult and cheering, thunderous cheering, until an abrupt hush cut it sharply, like an invisible knife.

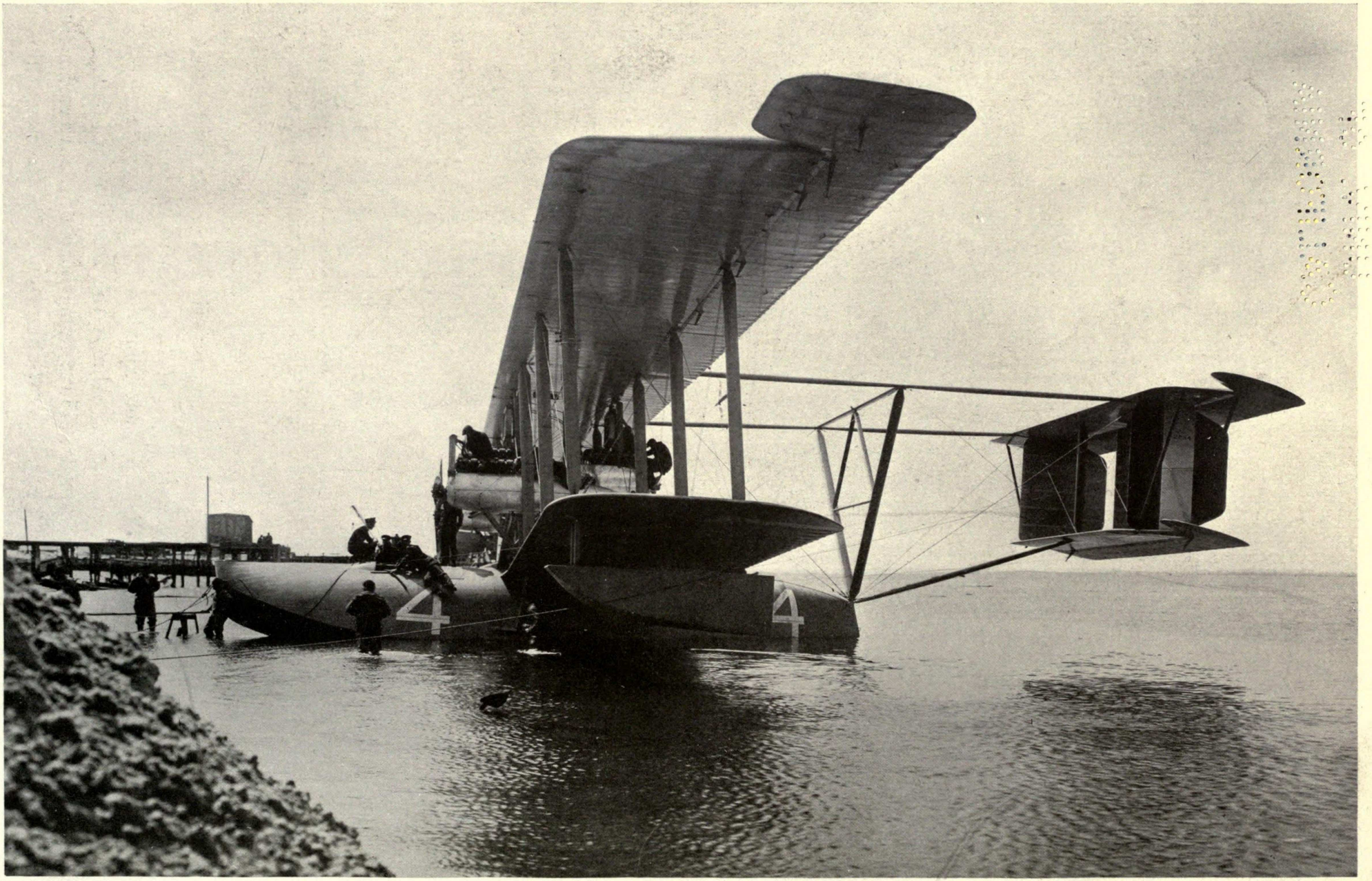
"O say, can you see—"

The anthem of a young but great republic filled the air. The flyers, haggard but happy, stood rigid at salute. About them flags, lights and uniforms gleamed motionless and dazzling out of the night. The music swelled upward into the dome of darkness, a triumphal hymn of the West sending its warriors East to free men from an impeding nature as it had lately freed them from men. Coming out of the sunset, the NC-4 had brought the sunrise of a new and great human achievement.

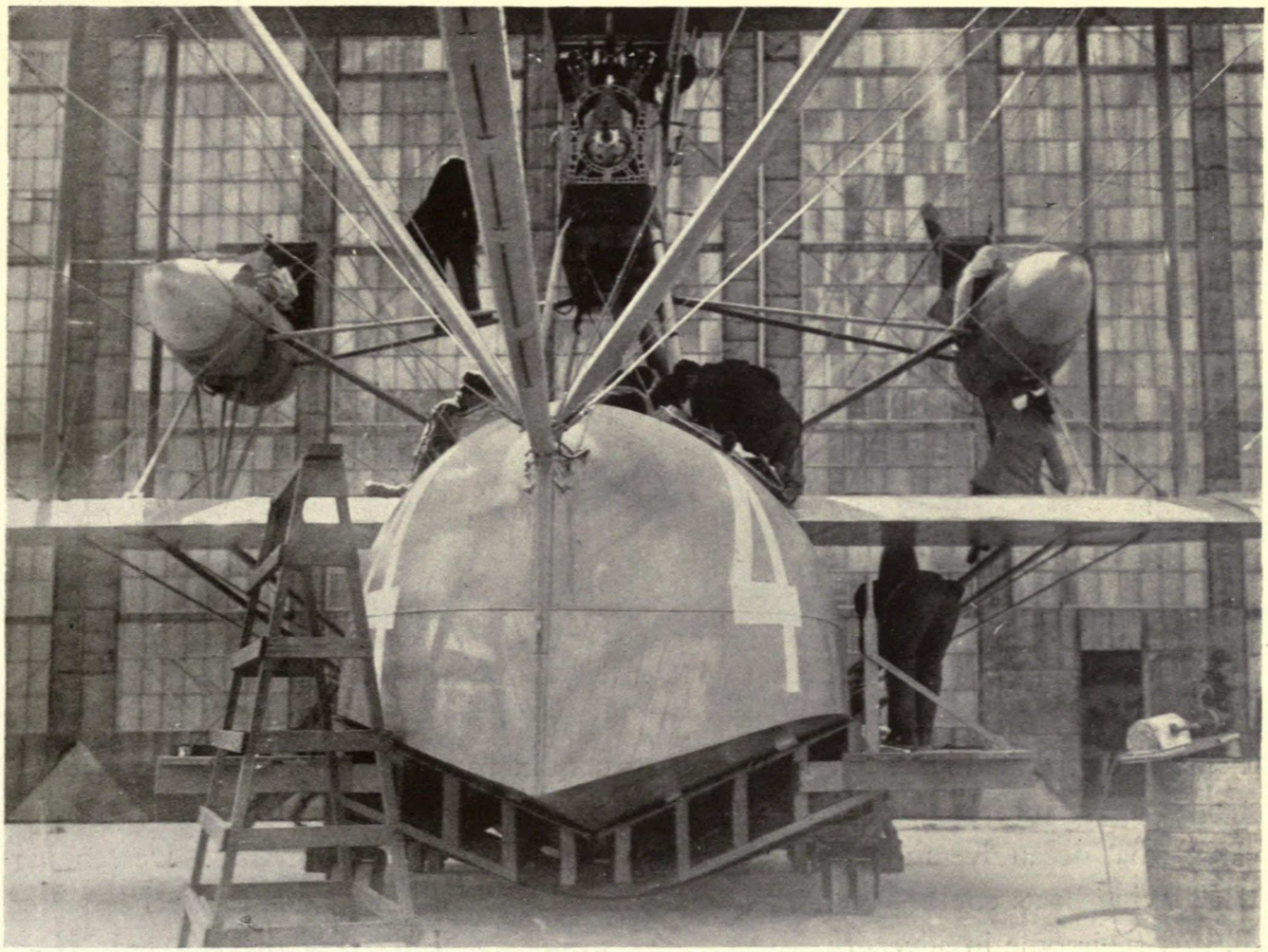
* * *

A light, indeed, that never was on sea or land! Man, earth and ocean tamed to his will, had reached like Prospero into the air and subdued it to his uses. He had won the secrets of demons, witches and gods. If he could not put a girdle around the earth in forty minutes, he could leap from continent to continent in a day. He had outrun the fastest wind; his speed began to vie with that of light and sound.

Almost the record of it is incredible. Three flying boats of the American Navy went sailing out into the east as the sun went down at Trepassey. They had pledged



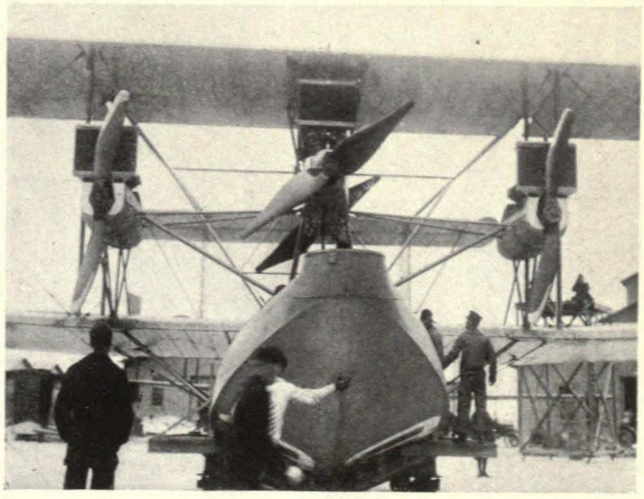
Side View of the NC-4, afloat at Rockaway, L. I.



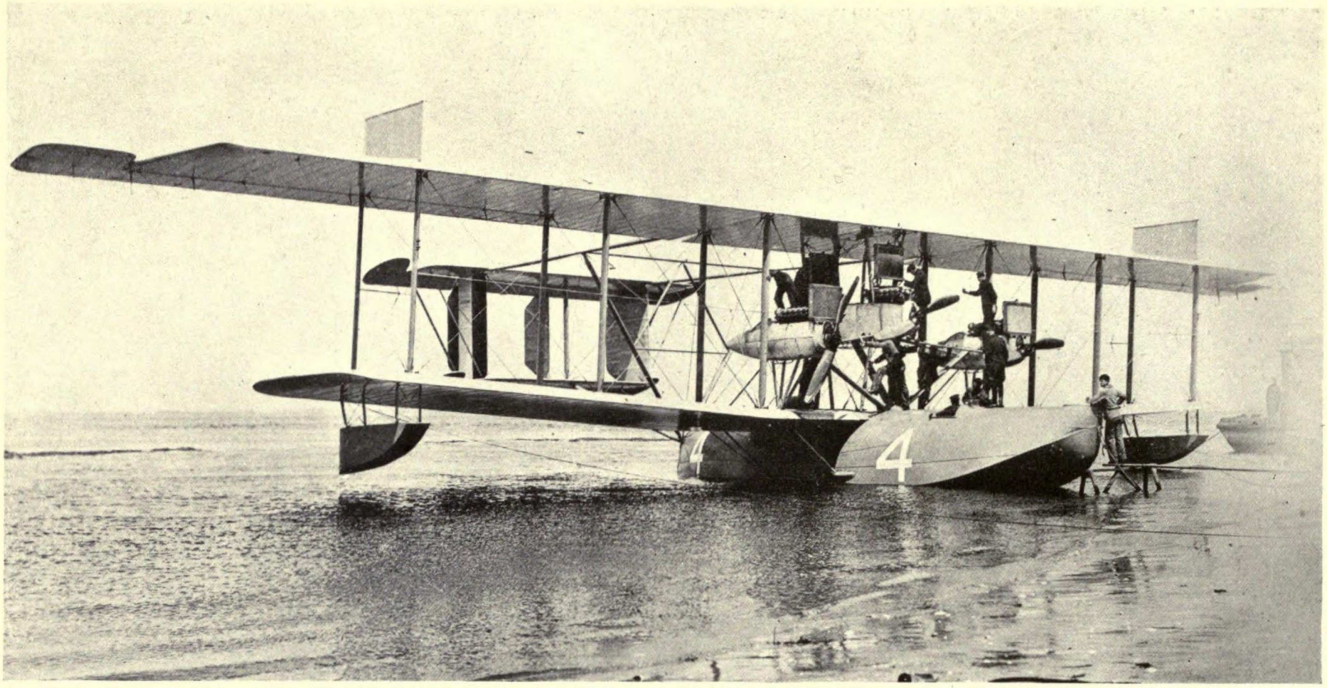
A close-up of the after part of the NC-4 Hull

themselves to a flight to Europe; the first stage of it to be a voyage of 1,380 statute miles, to be completed in a day, and to set them beside a few rocky islands washed by the mists of the middle Atlantic. They rose over a sea strewn with fogs and icebergs. They flew into vastness and night. Fifty miles apart shafts of light whipped the sky, flashed from destroyers of the U. S. Navy. The Navy-Curtiss planes outrode the darkness. Their lights or shadows trailed on 1,300 miles of ocean. At the door of achievement two of them, blinded by fog, descended, motors still going perfectly, to the ocean to get their bearings. A heavier sea than they expected damaged both so that a take-off was impossible. One, her crew picked up by a passing vessel, eventually sank. The other, covering 205 miles of ocean, came in battered, triumphant, to Ponta Delgada.

History will say that the NC-1 and the NC-3 succeeded. They did not meet



Bow view of the NC-3



The NC-4 afloat at the Naval Air Station, Rockaway, L. I.

their difficulties in flight, but in circumstances attendant on flight. They indicated what ocean flyers might expect and what flying boats could stand. They vindicated their type in adversity.

The NC-4 vindicated it by success. Taxying across the harbor of Horta in Fayal less than sixteen hours after leaving Trepassey, she became suddenly the talk of the world. Despite unusually trying conditions she reached the Azores, rising above the fog in time to catch a glimpse of a rocky point below her. Descending to a harbor she waited for her sister ships. Later, leaving the battered NC-3 at Ponta Delgada, she went on to Lisbon and to Plymouth, mastering the Atlantic for aviation and converting a skeptical world to the thorough practicability of flying.

A Flighty Talk on the "hull" situation

Chief of Staff, Capt. T. T. Craven and Commander J. H. Towers, U. S. N.

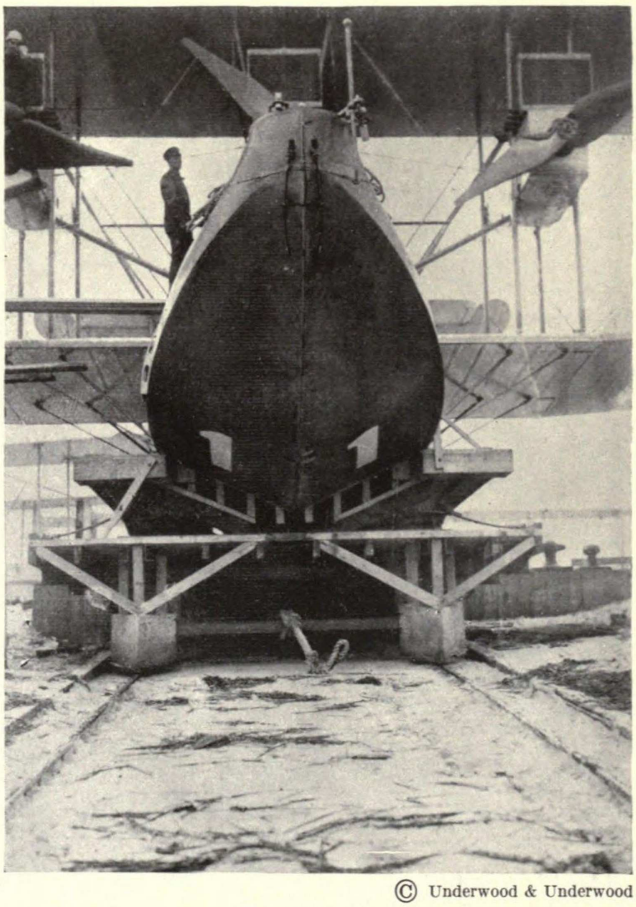
II—"A Boat With Wings"

"ONLY achievement," says the maxim maker, "fully enslaves curiosity." The Atlantic flight has rendered its bit of proof to the proverb. A flying boat has flown from America to Europe. Immediately the world mouthes a new question. "What *is* a flying boat?" Yesterday the type churned peacefully in the public mind with monoplane, aeroplane, triplane, hydroaeroplane, pusher, and airscout. Known, yes; but known vaguely. When, where, and by whom was it originated? Few could tell. Until yesterday none cared. To-day everyone is inquiry. A flying boat, learns the world, has been the first to link the continents by air. A flying boat, experts tell it, is the one craft suited to long over-the-ocean voyages, for it alone can descend to the ocean and weather out storms while riding the surface of the sea. What wonder that the public, assured of the magnificent future of the flying boat, thrilled with its spectacular present, demands to know its past?

The story is a necessary preface to the present narrative, for the man who invented the flying boat and the men who first flew it, its rapid growth, its swiftly broadening use, are all tied up with the final flight from New York to Plymouth.

If truth is stranger than fiction, it is surely because truth is often a paradox. And if truth has been a paradox, it has seldom been a more startling one than in the case of the transatlantic flight.

Here indeed the last was first and the first was last. Not only was the NC–4, latest launched of the NC's and latest to arrive at Trepassey, the final victor in the aerial race between the three, but the flying boat itself, first aeroplane to perform what in the largest sense is a cosmic feat, is the last type of craft which aeronautical ingenuity has evolved. It is the infant of



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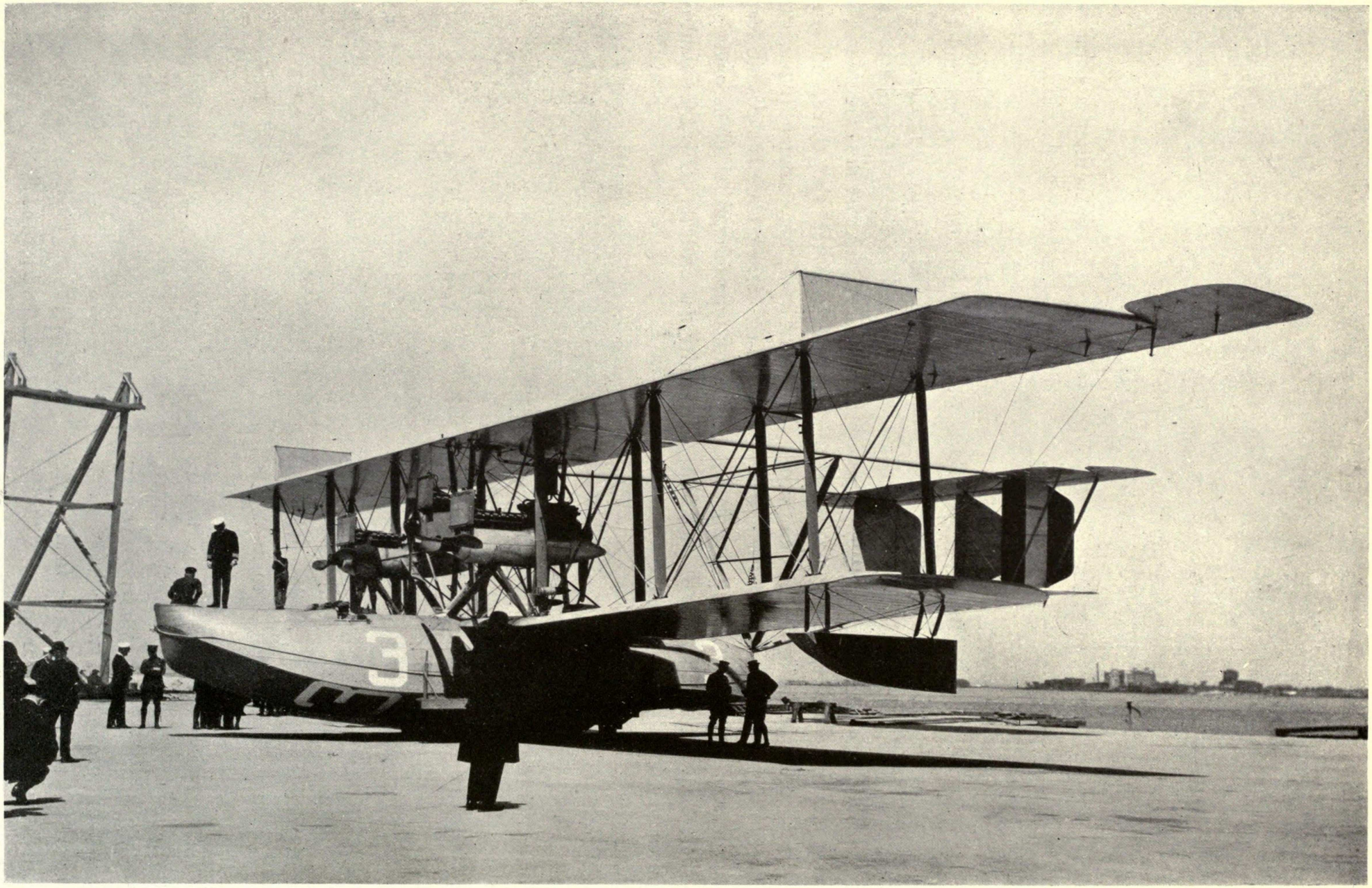
Bow of the NC-1



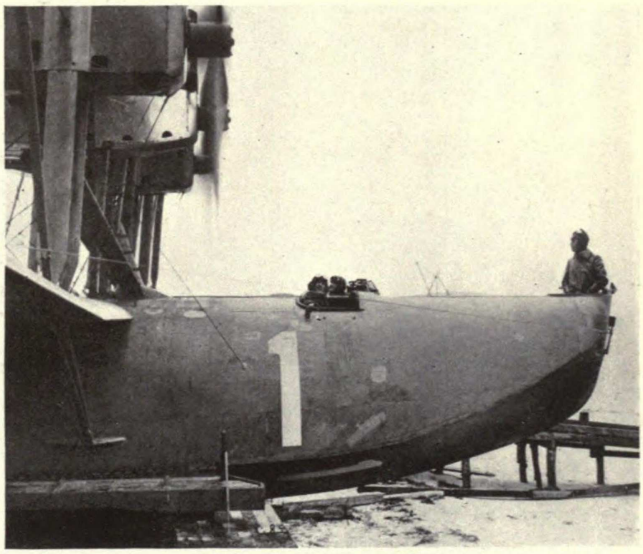
The NC-3 on the Beach at Rockaway

© International Film Service
The "Hull" authority—Commander H. C. Richardson, Construction Corps, U. S. N.

aviation. Practical aeronautics is sixteen years old; the flying boat eight or nine. But like Hercules in his cradle the new type has proved a prodigy. In the race for scientific achievement it has surpassed all models of aeroplanes and hydoaeroplanes.

Its story takes us back to 1908–09. The Aerial Experiment Association, a group of enthusiastic inventors including Alexander Graham Bell, inventor of the telephone, was at that time busy with aeronautical problems. Glenn H. Curtiss, director of experiments, was interested in flying from and alighting on water as well as on land. In 1908 an interesting attempt was made with the Loon,—the famous June Bug, first American machine to make a public flight of a mile, fitted with pontoons—but the attempt was not considered successful, though the machine seems to have left the water for brief intervals.

Mr. Curtiss, busy with aeroplanes during the next few years, could not give marine flying the attention he desired, but in 1910 indicated that he had not lost interest or belief in its possibilities by equipping his Albany-New York aeroplane



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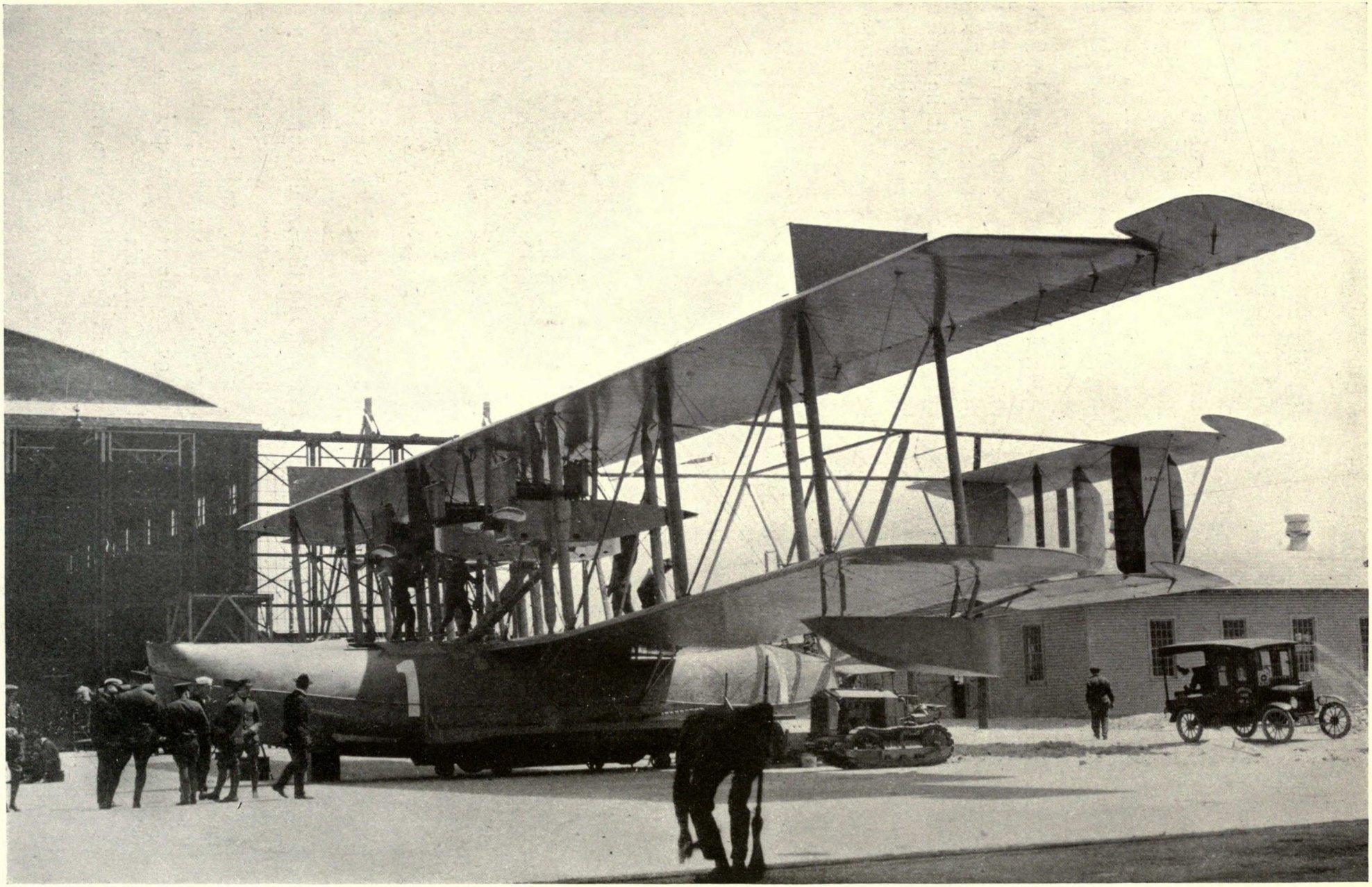
Testing the Motors of the NC-1

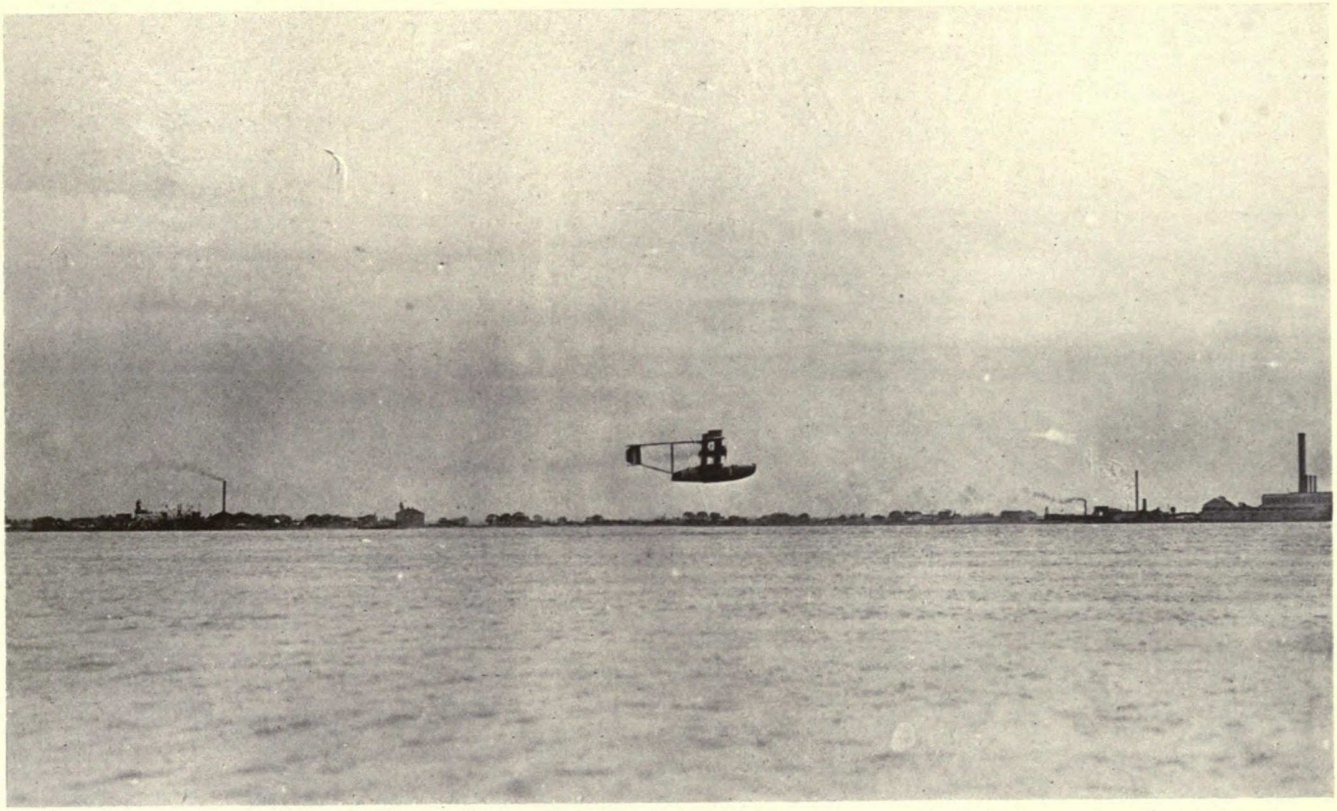
with wing floats which would have allowed it, in case of necessity, to land upon the Hudson. In the spring, summer and fall of 1910 experiments were made at Hammondsport, N. Y., and late in the same year Mr. Curtiss was able to plan a polishing off of the seaplane question at San Diego, California.

So certain had his experiments made him of an early success that the inventor invited officers of both the Army and Navy to join his camp on North Island,

Photo, Edwin Levick, N. Y.
Checking their Navigation Instruments



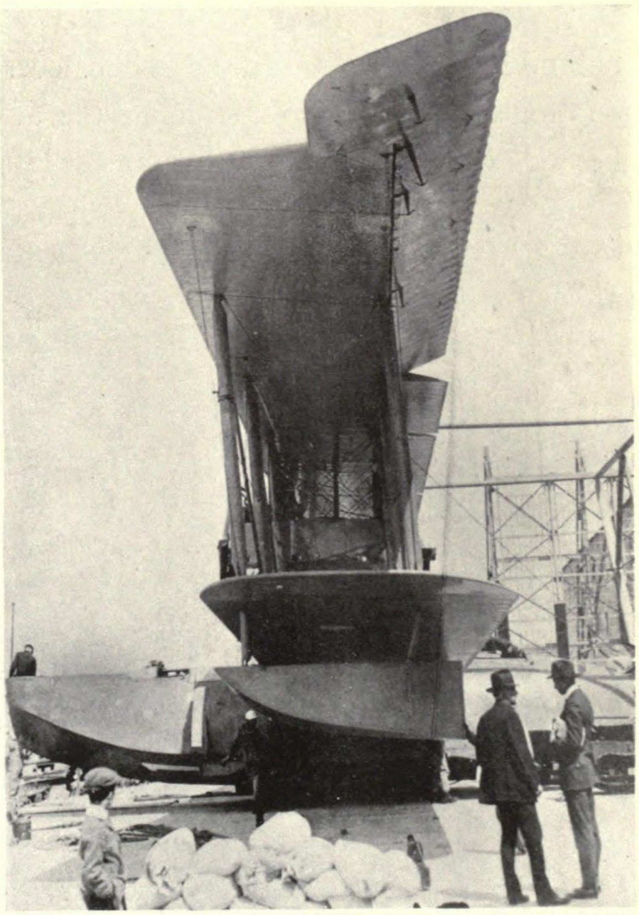
Rolling out the NC-1 for a Trial Flight



The NC-1 in flight at Rockaway

the latter to watch the development of the first over-the-water craft. Both Army and Navy officers were to receive flying instruction. The Army sent Lieut. Paul Beck of the Signal Corps, Lieut. J. C. Walker of the 8th infantry, and Lieut. C. E. M. Kelly, whose self-sacrificing death was later to be commemorated in Kelly Field, Texas, one of the largest flying fields in the nation. The Navy representative was Lieut. T. G. Ellyson.

In January, 1911, a hydroaeroplane was produced which arose from the water and landed upon it. The difficult problems of equilibrium — altogether different from those of a land machine—of water suction on the pontoons, of the location of power plant, had all been solved. When one learns that an Italian aviator found the suction on his floats so great that he only rose by leaving the bottom of his pontoons



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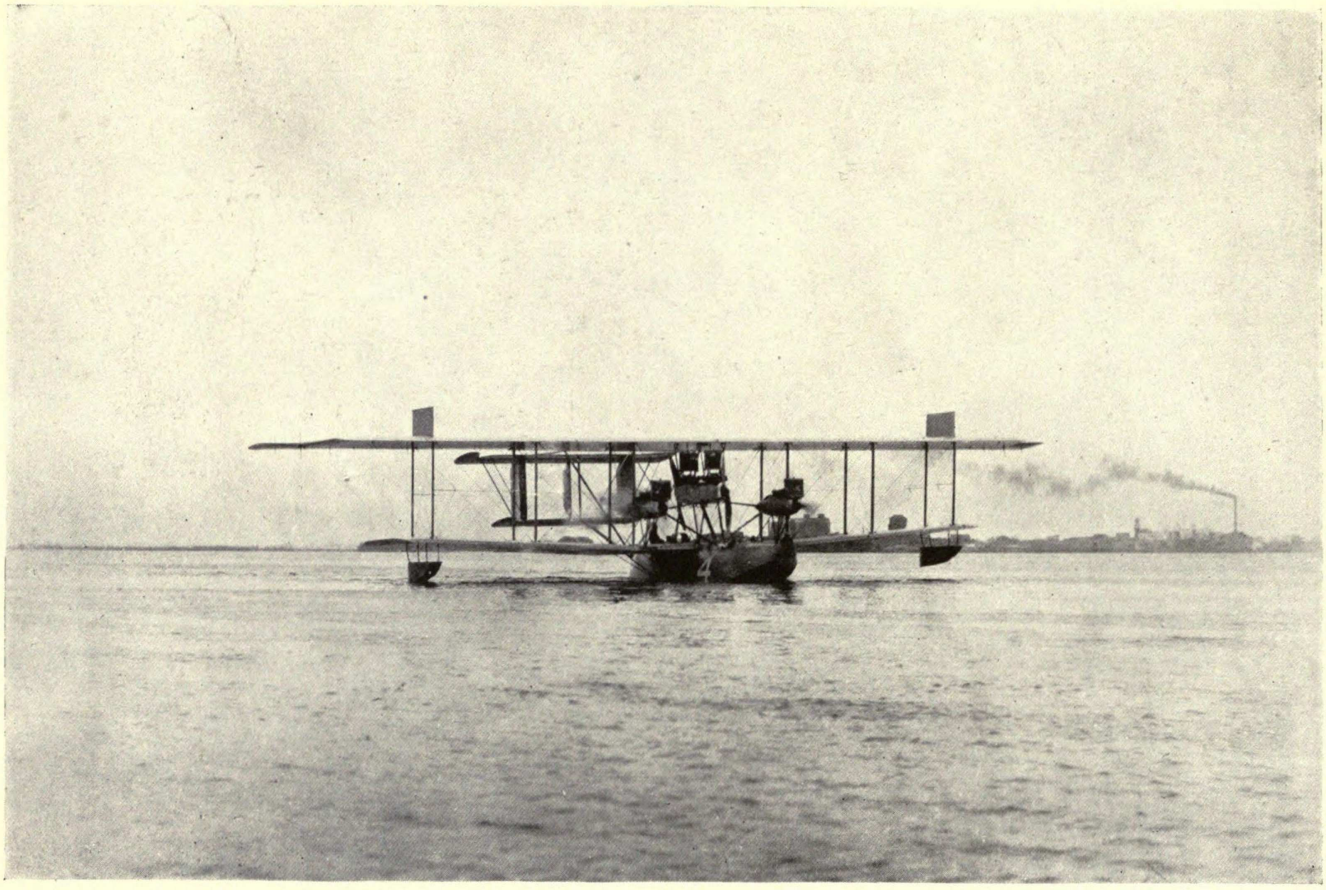
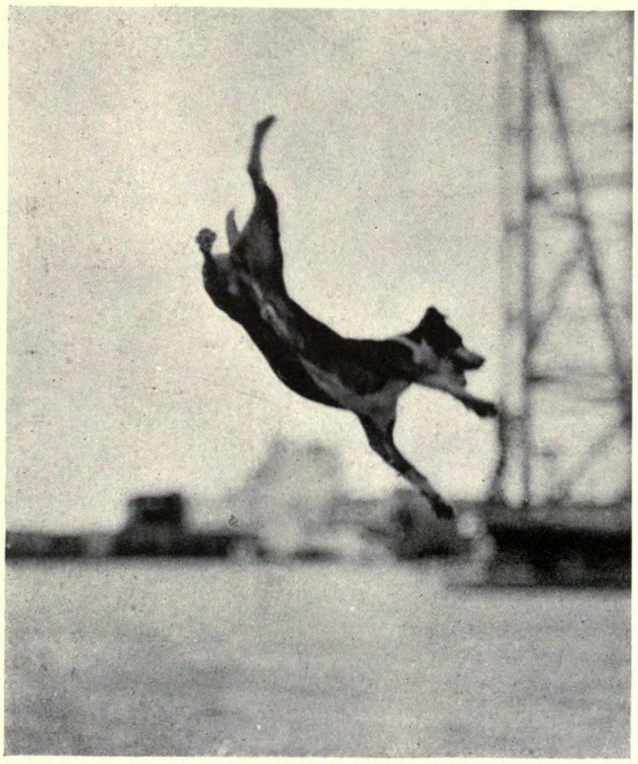
Side View of the NC-1, at the Rockaway Naval Air Station, L. I.



The NC-4 afloat, Rockaway, L. I.

behind him, as a rat does its tail when necessary, one may begin to appreciate the difficulties overcome. Spray thrown up by a moving hydro has perforated a propeller like bird shot. This fact may again suggest the extent of the achievement. All was experimental. Facts known to-day had then to be wrenched from a reluctant Nature by constant experiment and in the face of often discouraging results.



NC Mascot

When the U. S. Navy learned of the success of the San Diego experiments it immediately issued specifications for a hydroaeroplane, and in July, 1911, Mr. Curtiss delivered this to the Government. He then turned his attention to the flying boat, and during the winter of 1911-12 evolved a practical machine of this type. At Hammondsport, N.Y., in the summers of 1912 and 1913, many young Naval officers gathered to observe and fly the new marine model. Among these were Lieuts. J. H. Towers, P. N. L. Bellinger,

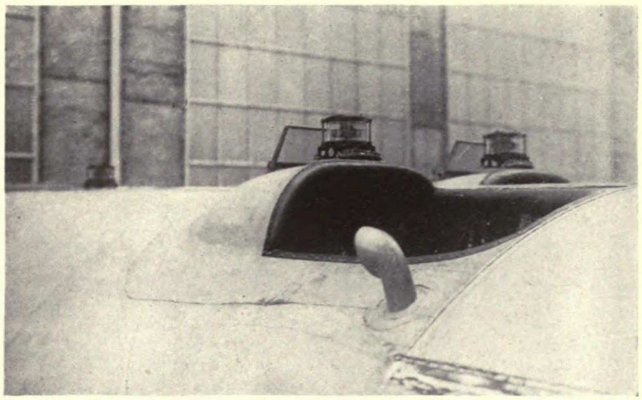
and H. C. Richardson. These pioneers of 1912 were to become commanders and pilots for the transatlantic flight of 1919.

The Curtiss flying boat won quick recognition. It was accepted by the U. S. Government. It knocked succcessfully at the aeronautical doors of Russia, Brazil, Japan, and other nations. And in the first few years of its existence it leaped into unusual renown as the first heavier-than-air flying type to be constructed for a transatlantic flight.

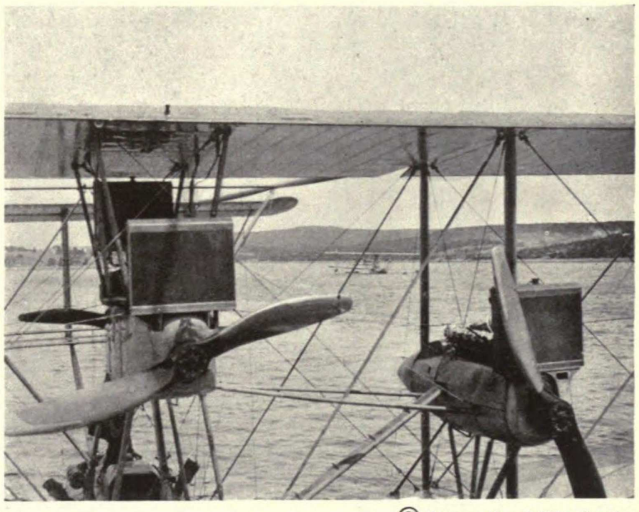
The spring of 1914 was as full, indeed, of transatlantic thrill as that of five years later. Rodman Wanamaker had decided to attempt the subjugation of the ocean for aeronautics "in the cause of science and the interest of world peace." He had asked Lieut. J. C. Porte of the British Admiralty, then temporarily retired from service, and Lieut. J. H. Towers of the American Navy to pilot a flying boat to be designed by Glenn H. Curtiss.

Like the projected voyage of Columbus, the expedition provoked ridicule. Even aeronautical designers claimed it to be impossible. Mr. Curtiss, however, was willing to undertake the construction of a vessel of sufficient strength and carrying capacity to reach the Azores, and the *America*, first of a line of multi-motored seaplanes, was built at Hammondsport, New York, in the spring of 1914. A machine of seventy-two foot wing spread and two 160 H. P. motors, she eventually mounted three motors capable of totalling 480 H. P. or more, and had capacity for ample fuel supply, food, and two pilots.

The world waited with tense interest on the *America's* attempt as the last hours of July, 1914, were ticked away.



A Close-up of Pilot's Cockpit, showing Compass, Windshield and Ventilator



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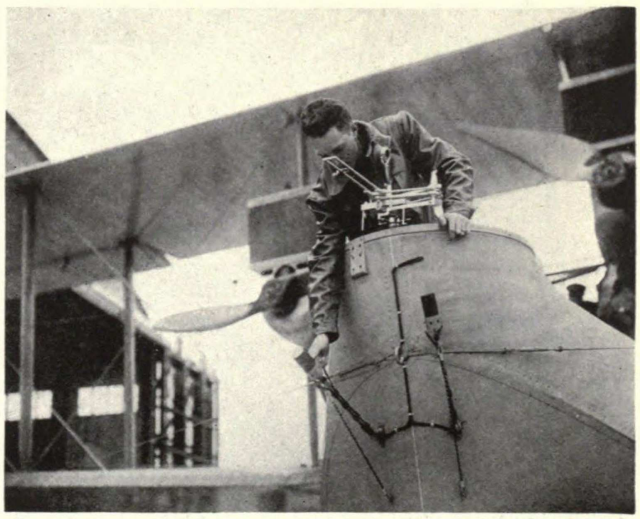
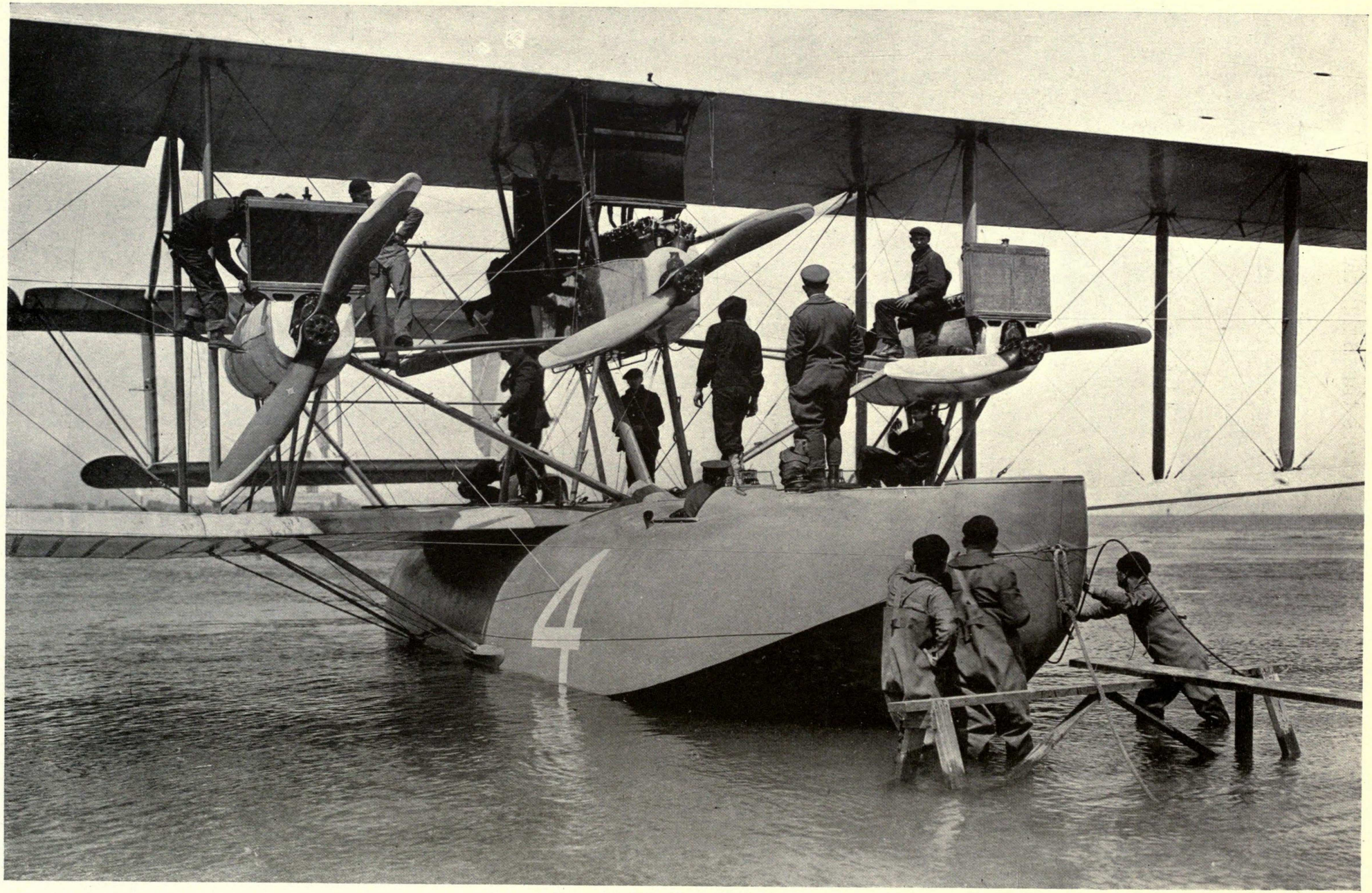
A Close-up of the NC Engines

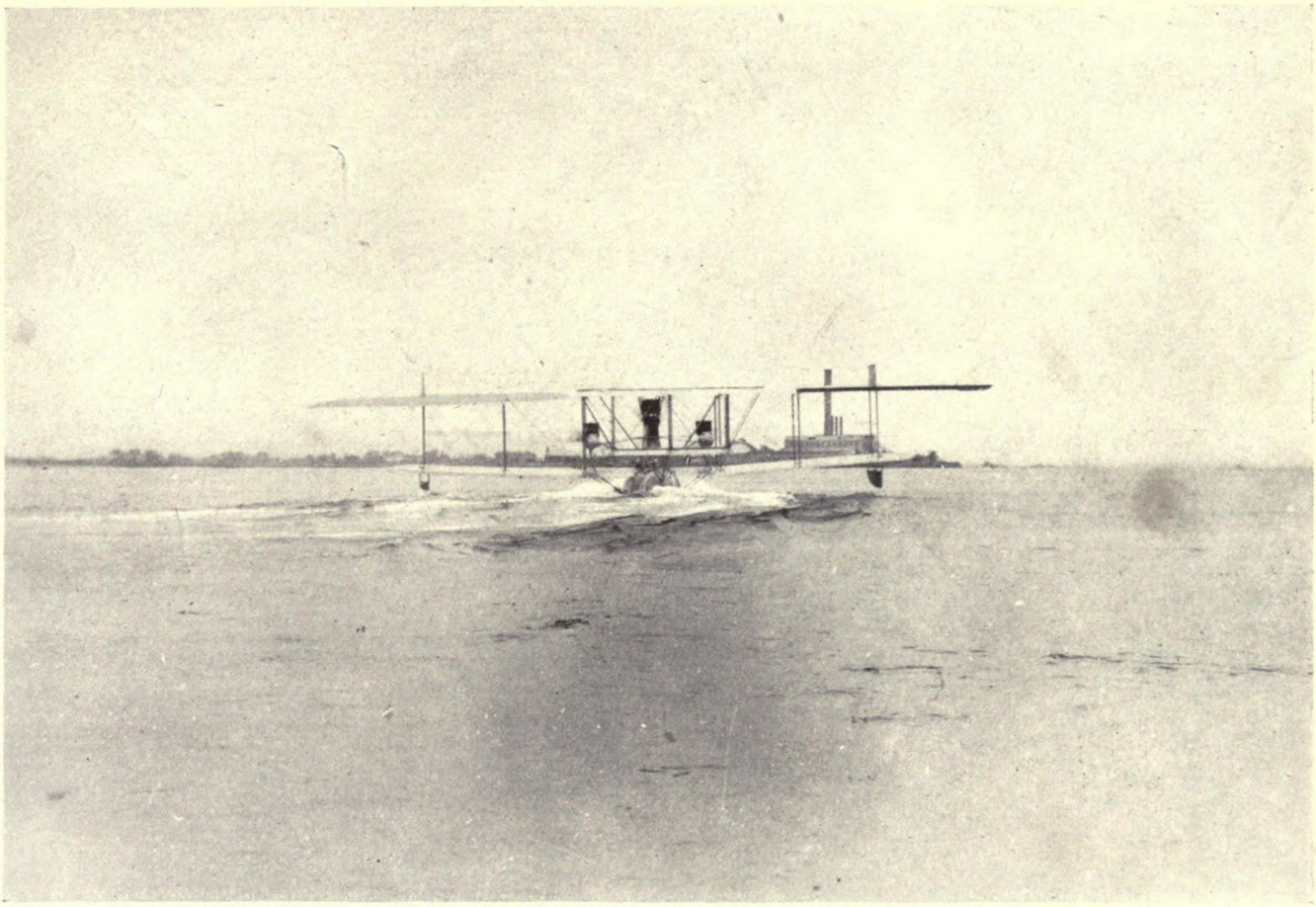


Photo, Edwin Levick, N. Y.

The "Drift-Indicator" above and "Landing Flares" below Bow of one of the NC's



Tuning up the NC-4



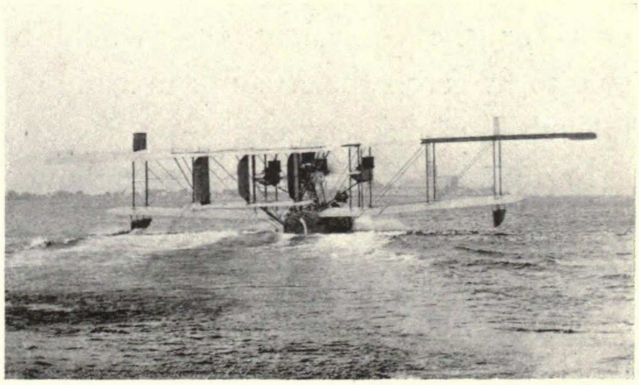
The NC-4 "Taxying" out for a trial flight

Unfortunately with August war came,—war which shattered the plans of millions and changed the interests of a dozen nations. Lieut. Porte was hastily recalled to England. The condition of Europe, a continent rolling in blood and fire, made unfitting any attempt to start the *America* on her voyage. She was disassembled. Although later purchased by the British Government and used in maritime flying service, she never turned her wings toward Europe for a continent to continent flight.

Nevertheless, the *America* had served a great purpose. She had established the idea and practice of multi-motored seaplanes. She had sown the seed of the America to Europe flight.

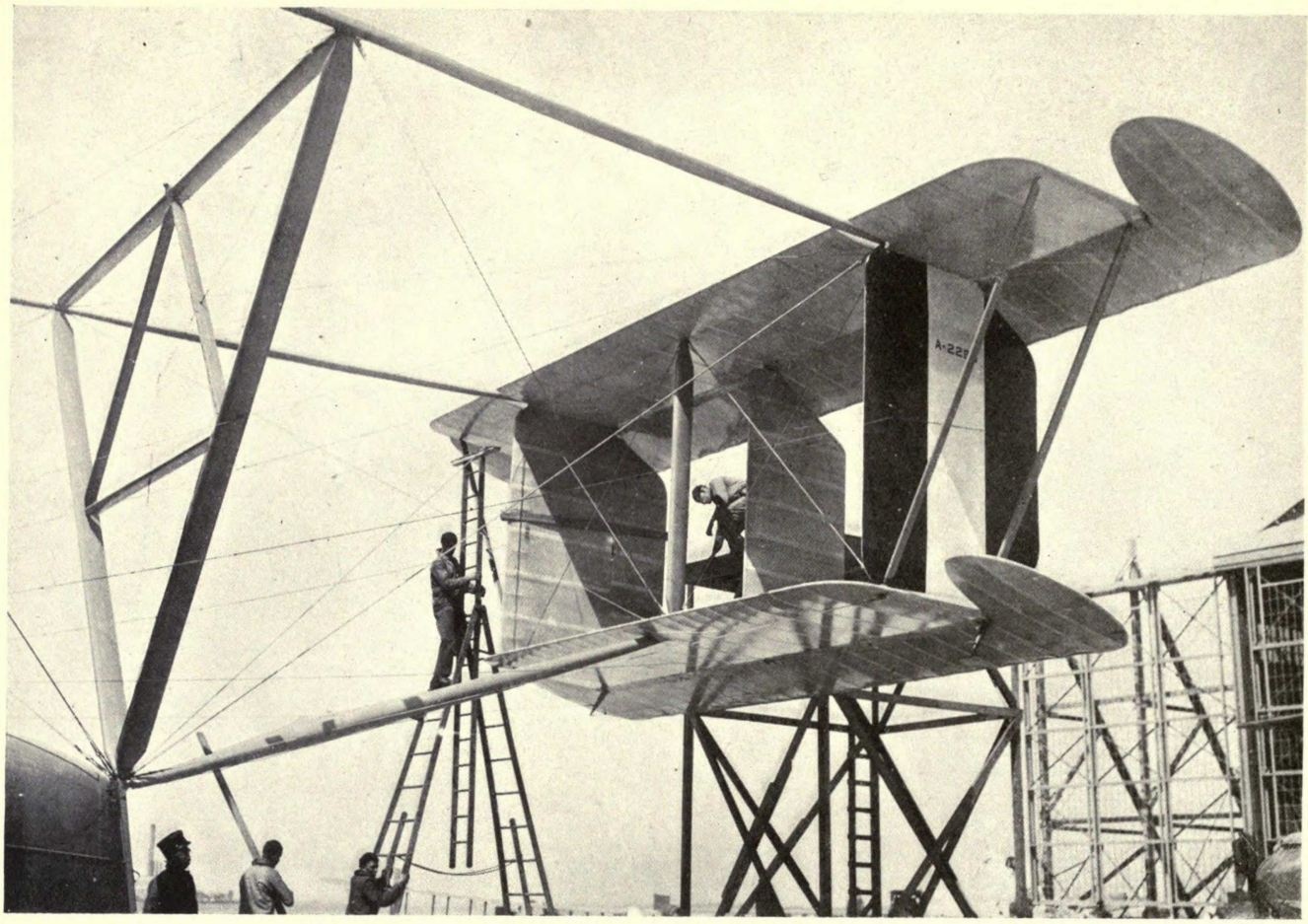
Events were now to bring that flight nearer to realization.

The American declaration of war in April, 1917, evoked a new Air Service, "initiated in a burst of enthusiasm and imagination almost unparalleled in our history." It was a service, naval as well as military. Admiral Taylor, Chief Naval Constructor, was at once busy with plans for the development of the most effective marine flying service possible.



Photo, International Film Service

NC-1 Taxying for a Trial Spin off Rockaway, L. I.



Setting up the tail of the NC-3

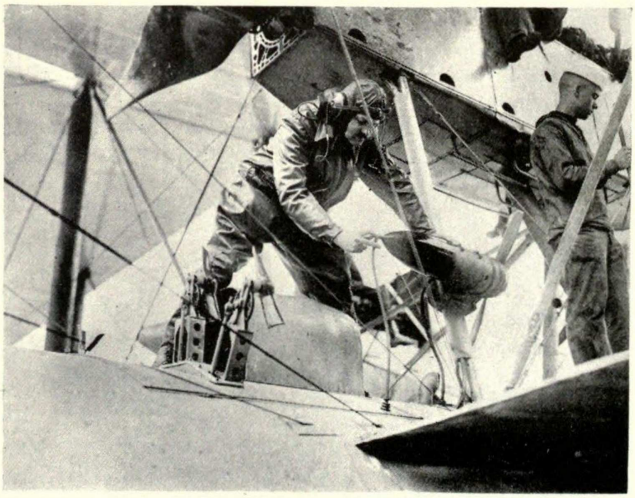
Naturally the submarine peril demanded attention, and on August 25, 1917, Admiral Taylor formulated a plan for attacking U-Boats with flying craft.

"If we can push ahead on the airplane end," he wrote to Naval Constructor J. C. Hunsaker, "it seems to me that the submarine menace could be abated, even if not destroyed, from the air.

"The ideal solution would be big flying boats or the equivalent, that would be able to fly across the Atlantic to avoid the difficulties of delivery, etc."

Fortunately the United States, though a new entrant, had been supplying the Entente nations with war materials for some time, and had resources at her disposal which would not otherwise have been available.

Among these one of the most valuable was the plant and personnel of the Curtiss Aeroplane and Motor Corporation, which had been building aeroplanes and seaplanes for Great Britain and Russia since 1915. The *America* had been the basis



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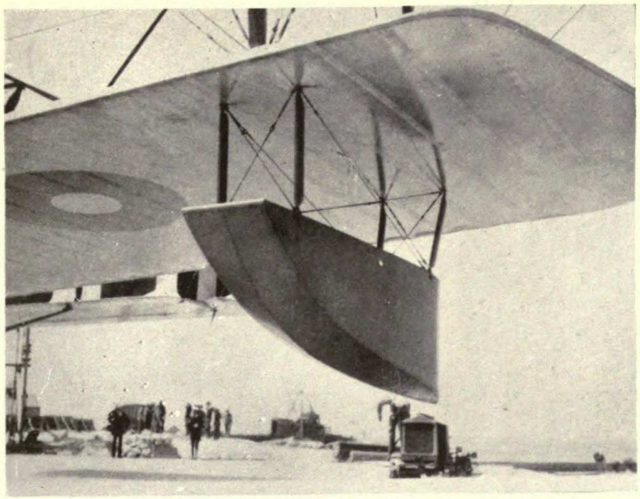
Testing the "Generator" of Wireless Apparatus



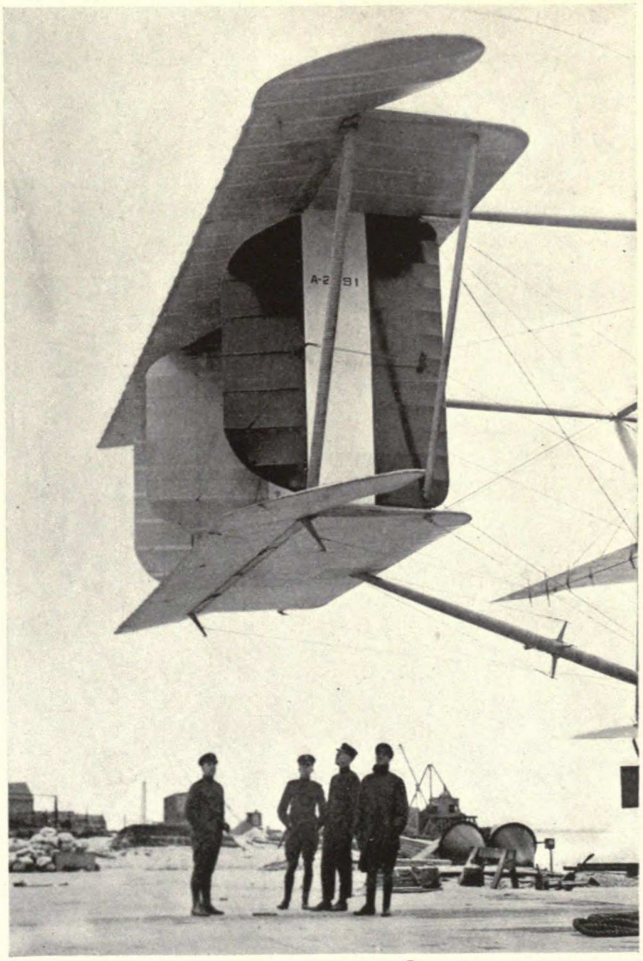
A Close-up View of one of the Wing Pontoons

for British flying boat designs such as the H-16, and some of these had been constructed at Buffalo. The HS had been a later American development, and in 1916 the Curtiss organization had produced Model T, a triplane flying boat of 133 foot wing spread and four 275 H. P. V-4 Curtiss motors. This stands to-day as the largest flying boat ever constructed, and was until recently the largest aeroplane, its wing spread exceeding by two feet that of the British Tarrant plane.

Mr. Curtiss was known to have ideas, based on this long experience with the flying boat, for further multi-motored types. It was natural, then, that as a result of Admiral Taylor's suggestion of August 25, he should be invited to Washington for a conference with Navy engineers on the design and construction of the proposed submarine destroyers. On September 9, 1917, he, with the Curtiss Engineers, W. L. Gilmore and Henry Kleckler, met the Navy representatives and decided upon a general course of procedure with regard to large flying craft to be known as the Navy-Curtiss flying boats.

The plan was to pool all ideas, Naval and Curtiss, in the interests of the Nation and of the new flying type. Naval Constructors J. C. Hunsaker, C. G. Westervelt, H. C. Richardson; Dr. A. F. Zahm and other Naval engineers were to cooperate with Curtiss designers, and to superintend the actual construction of the flying boats at all stages of their production at the Curtiss plant.

The new design departed from previous models in important respects. One of the most radical changes embodied was the shortened hull. The 133 ft. Curtiss Model T, like the smaller *America*, had had its tail surfaces attached directly to the boat portion of the seaplane. The hull was thus necessarily long, like the



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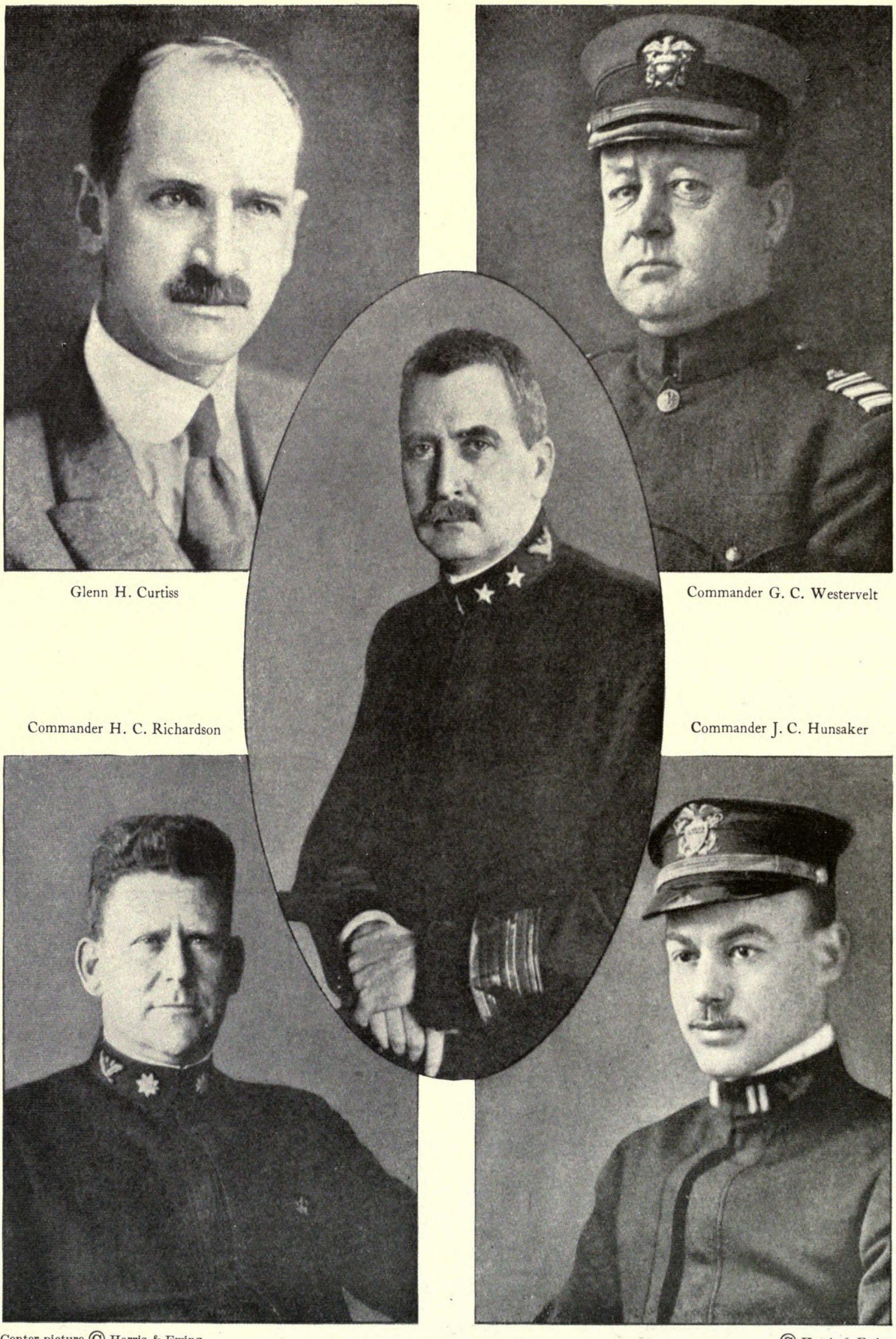
"Some Tail"



Glenn H. Curtiss

Commander G. C. Westervelt

Commander H. C. Richardson

Commander J. C. Hunsaker

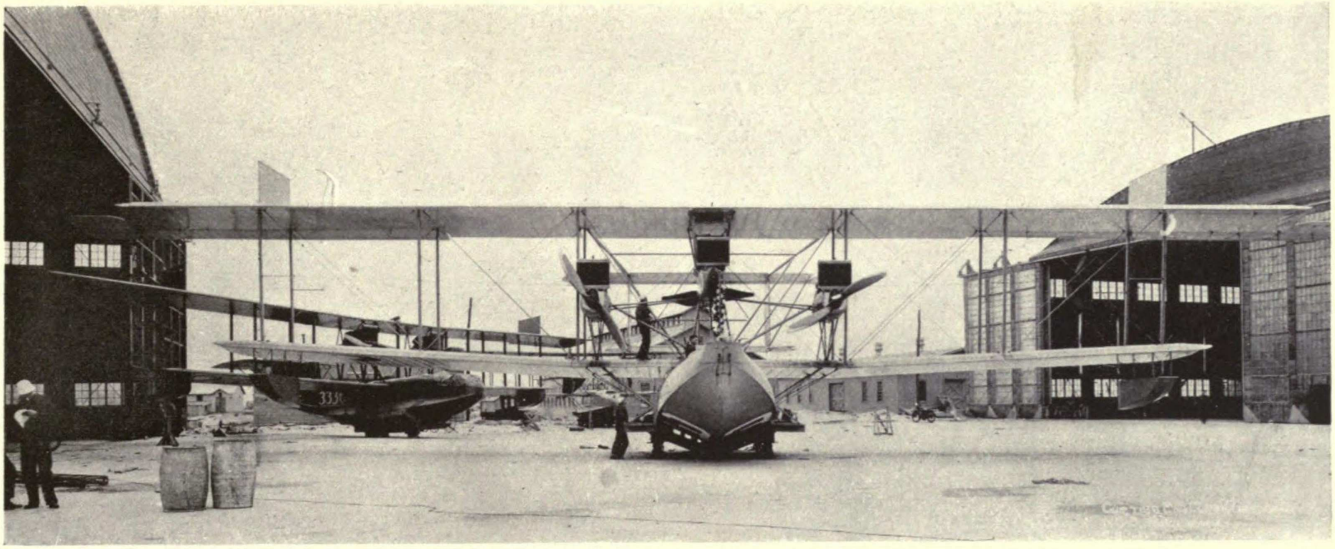
Center picture © Harris & Ewing

Rear Admiral D. W. Taylor (center)

© Harris & Ewing

THE MEN WHO ARE RESPONSIBLE FOR THE NC FLYING BOATS

Courtesy "The World's Work"

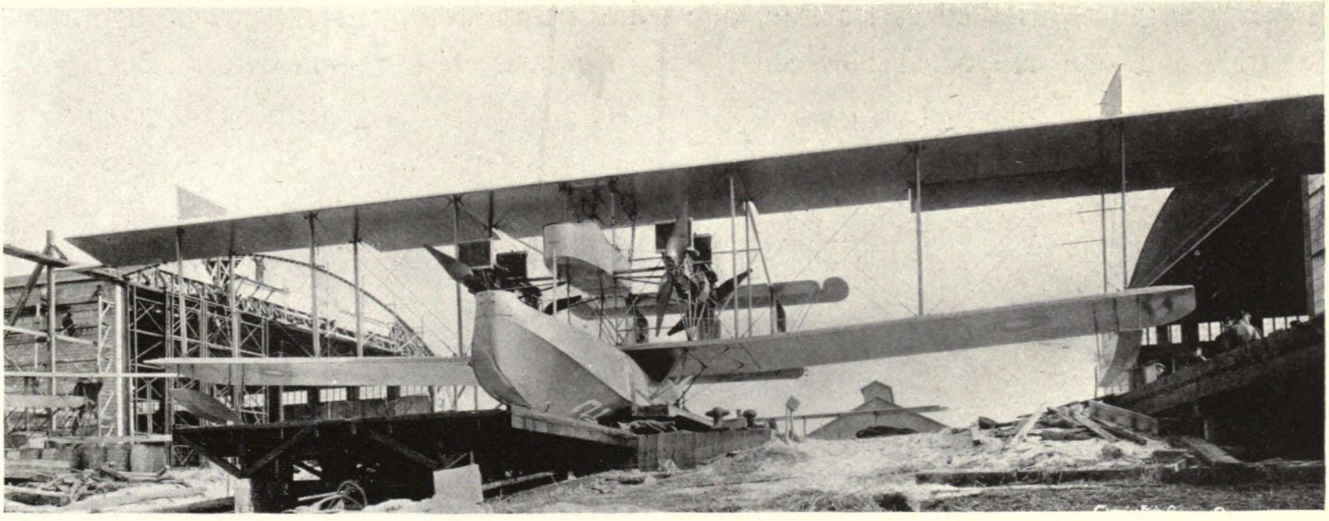


Front View of the NC-3 at Rockaway Naval Air Station

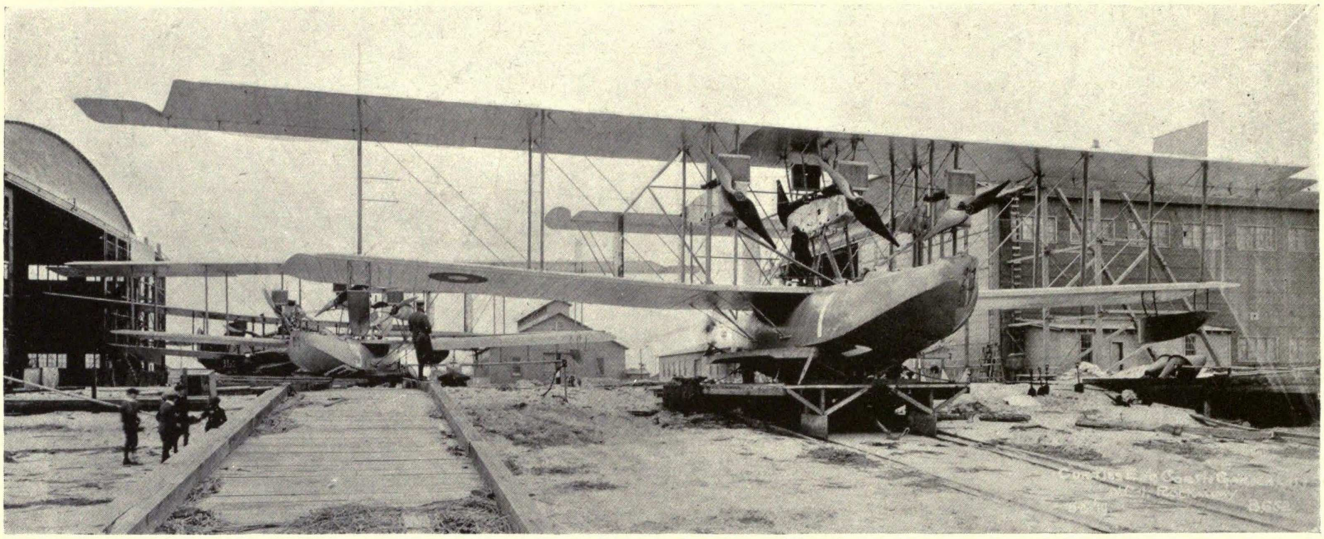
fuselage of an aeroplane. Landing and taxying put upon it a much greater strain than that borne by the corresponding fuselage of an aeroplane or the hull of a small flying boat. The NC designers escaped the alternative of a too heavy hull or a weak one by cutting off the rear end of the hull. What does not exist cannot be weak. The "tail surfaces" were mounted on outriggers from a short, compact hull which, as experience has indisputably proved, achieved an unprecedented strength.

Important changes were also made in the shape of the hull. Commander Richardson, U. S. N., carried on important tests for this in the model basin at the Washington Navy Yard, assisted by Naval Constructor McEntee. From his own ideas and suggestions made by Engineer W. L. Gilmore of the Curtiss organization he developed a hull peculiarly fitted for effective taking off and taxying.

The use of Liberty motors, of an all-aluminum gasoline system, of box section beams, and of the box tail were other important innovations in the NC boats.



The NC-2 on the marine railway at Rockaway



The NC-1 in her cradle at Rockaway, with the NC-3 in the background

Three motors were deemed sufficient power plant for the new seaplanes.

The authorization by the United States Navy for the construction of the NC boats was signed by Secretary Daniels in December, 1917. Construction began at the Curtiss Engineering Corporation in Garden City, Long Island, during January, 1918. The NC–1 was successfully flown October 4, 1918.

This new flying boat was one of the largest, certainly, on the whole, the most powerful of flying craft completed to date. She had a wing spread of 126 feet, and overall length of 70 feet. Her three Liberty engines, installed as tractors, one central, and one supported between the wings on either side, developed a total of almost 1200 horse power. Above all, the staunchness of the hull and the weight of 24,000 pounds at which the NC–1 flew fully loaded, marked a new era in seaplane and aeroplane performance.

Unfortunately the NC-1 was not finished in time for war service. The armistice, signed November 11, found her skirting the Atlantic coast in preliminary trials of remarkable promise. With the armistice disappeared, and shall we not say fortunately, the idea of employing her or her sister ships for battle uses. The activities for which they were reserved the following pages attempt—acknowledging in an inadequate fashion—to describe.

III—Planning for a Voyage

ADMIRAL Taylor's suggestion of August 25, 1917, called for a machine able to fly across the Atlantic.

The idea of such a crossing had never lapsed during the preliminary months of design and construction which preceded the first flight of the NC-1 on October 4, 1918. Now, in December, 1918, it revived with fresh intensity.

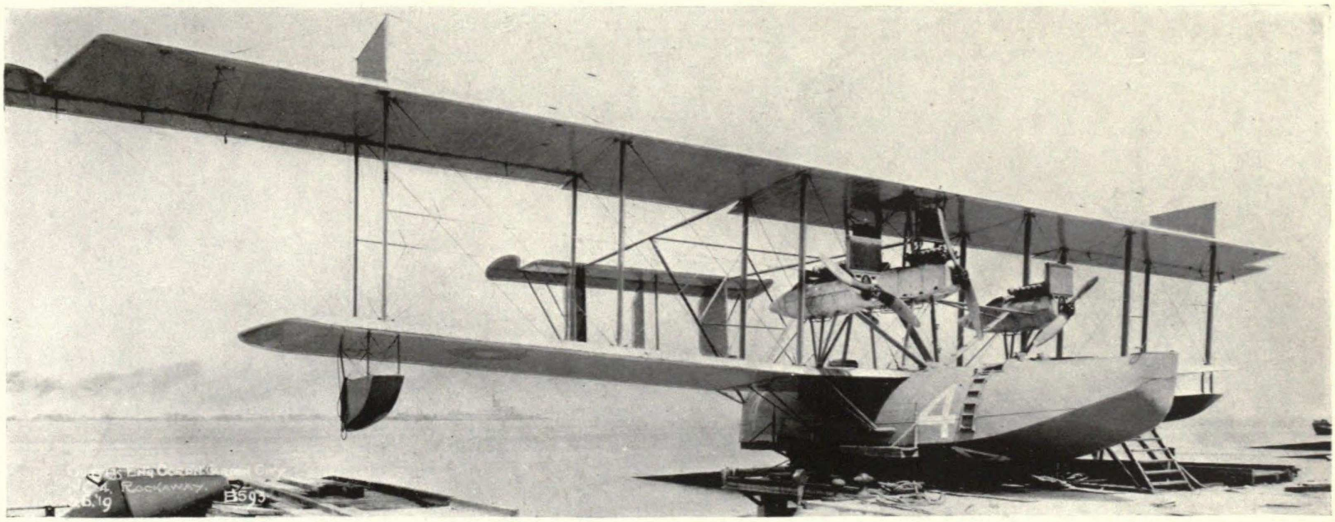
"If there is to be no fight, there will at least be a flight!"

Such, in effect, was Navy sentiment. For already, with the beginning of winter, Naval officials laid their plans for an attempt to fly to Europe to take place early in May of 1919. Route, seaplanes, commanders, fuel, and auxiliary service were carefully discussed in Washington long before the *Daily Mail*, across the water, had made an offer of £10,000 which was to send half a dozen British machines to Newfoundland to select their fields and build their hangars in the fog and melting snow.

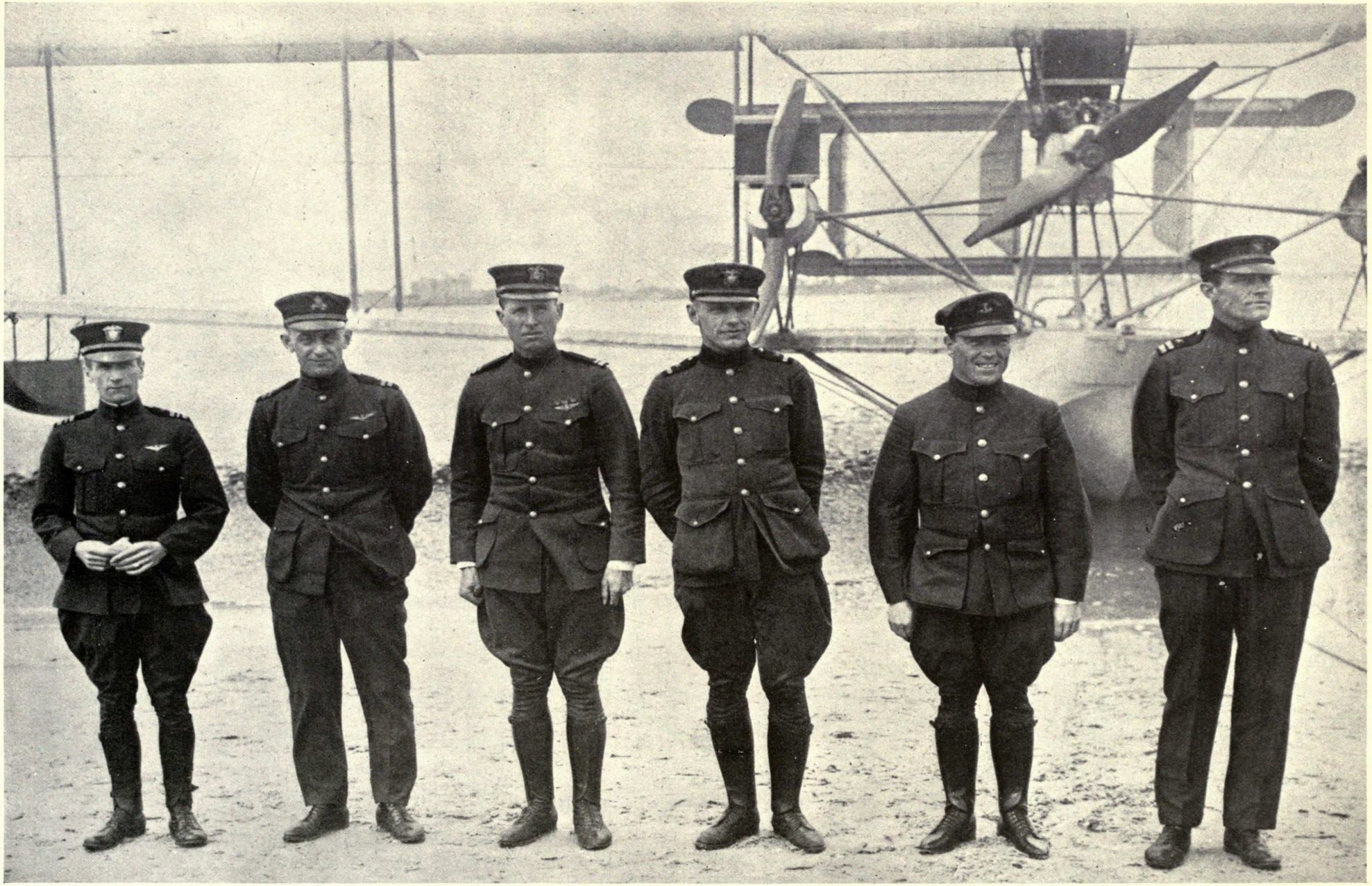
The American Navy could not well have hesitated between the two possible methods of crossing the Atlantic.

One way, the world knows, was to make the flight a great sporting event. The other possibility was to keep it, as closely as possible, to a well organized scientific expedition.

Obviously the American Navy could not, even if it would, choose sport in preference to science. Dignity and efficiency forbade that. Its pilots were sent out, not on their own initiative, but by official order and under official endorsement. They must be assisted and protected. They must have the best flying



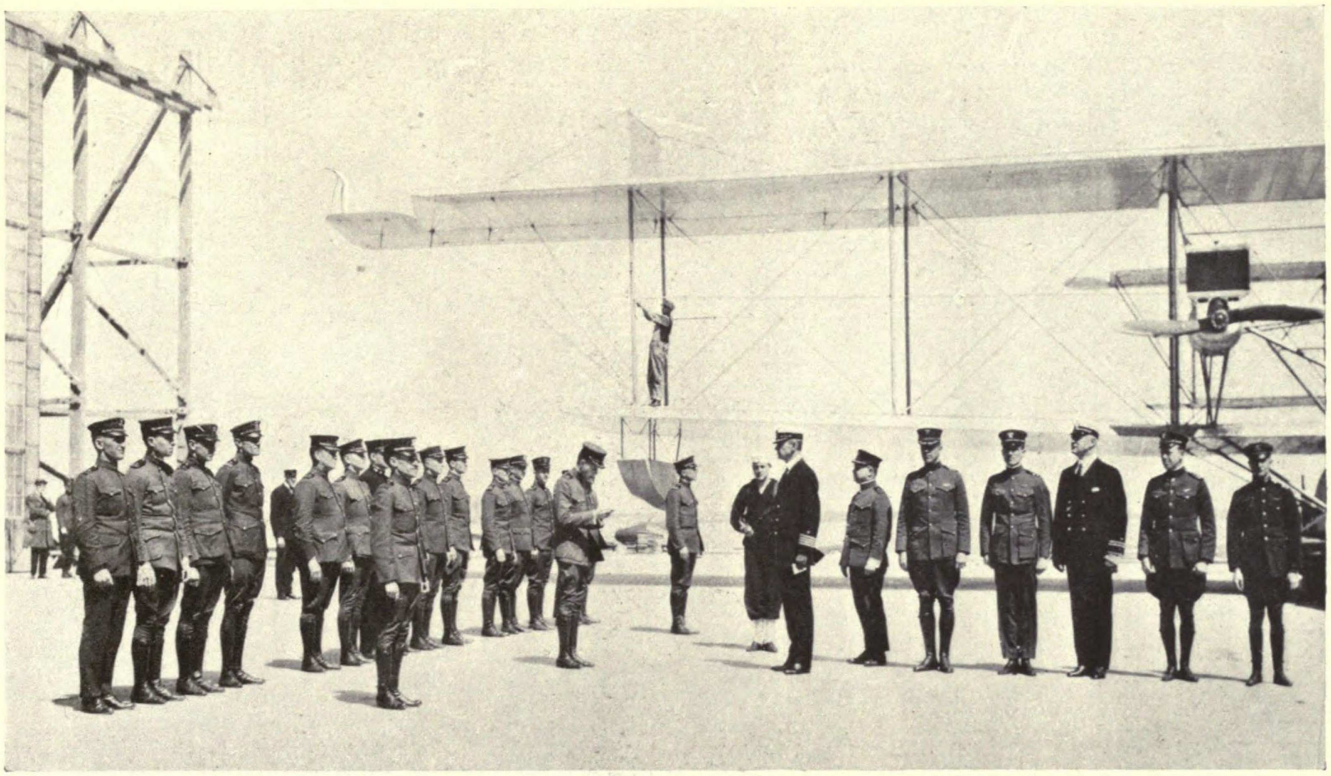
The NC-4 on her cradle at Rockaway, L. I.



Photo, International Film Service

CREW OF THE NC-4 AT ROCKAWAY

From left to right—Lieut. Commander A. C. Read, U. S. N.; Lieut. E. F. Stone, U. S. C. G.; Lieut. (j. g.) W. Hinton, U. S. N.; Ensign H. C. Rodd, U. S. N. R. F.; Chief Special Mechanic E. H. Howard, U. S. N.; Lieut. J. L. Breese, U. S. N. R. F.



Commander J. H. Towers, U. S. N., reading his orders on formal receipt of the NC's from Captain T. T. Craven, Chief of Staff

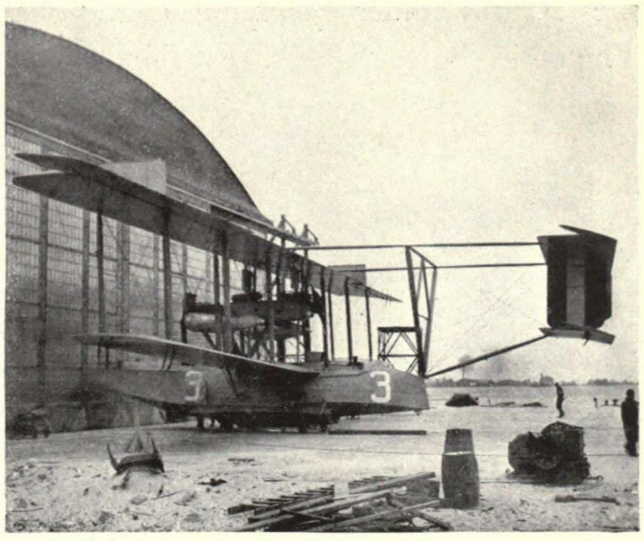
craft available. They must go by the best even if not the quickest route. They must be furnished with all possible auxiliary service. Any other course would be a slap in the face for the Service from its own personnel.

The careful and extensive organization which characterized the NC flight, the selection of Navy-Curtiss flying boats, and the choosing of the Newfoundland-Azores-Lisbon-Plymouth route were the results of these facts.

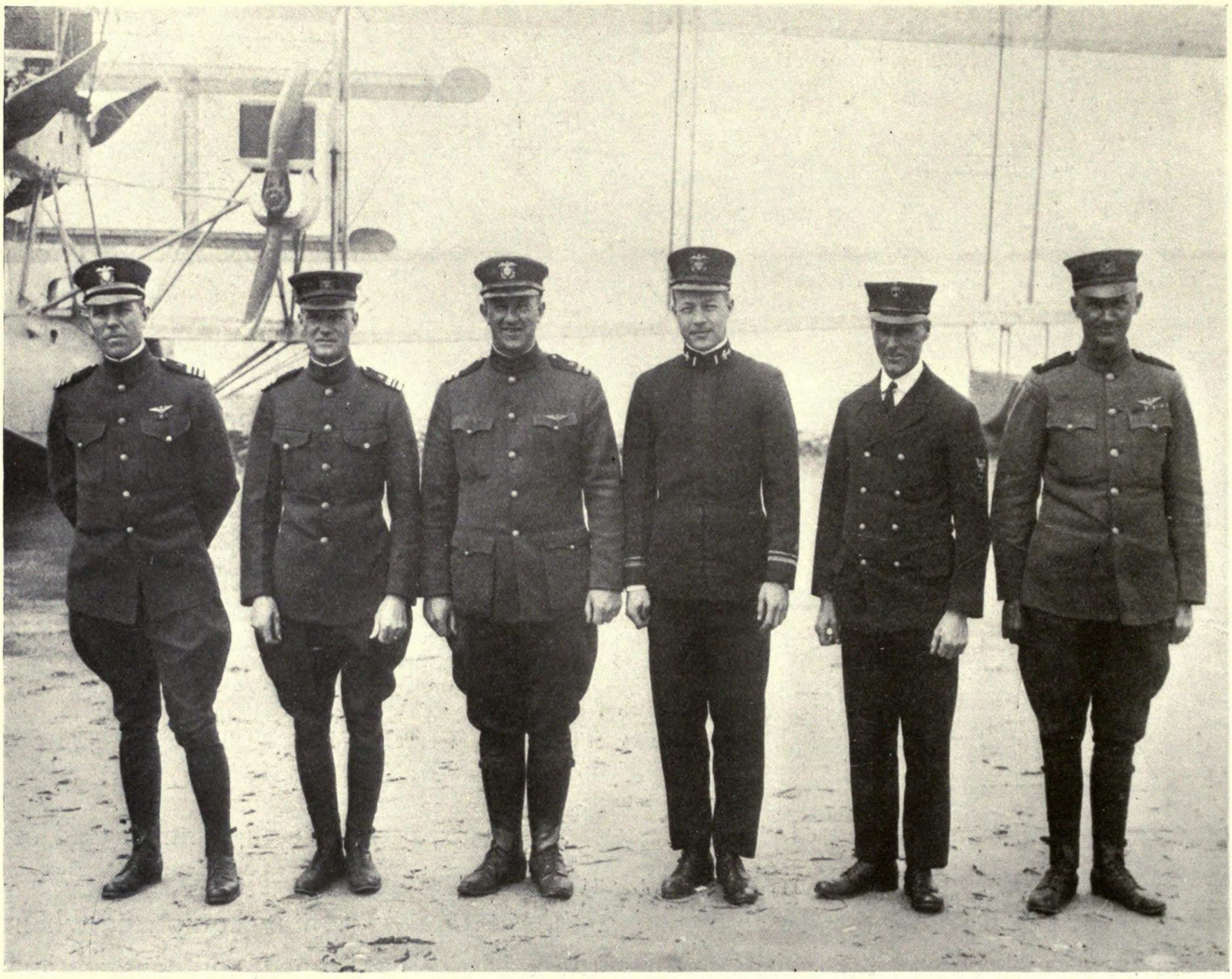
The chief features of the organization were Government weather reports, the extensive use of radio equipment, the assigning of Government destroyers to act as tenders, and the establishing of a line of destroyers reaching from Trepassey, Newfoundland, to Lisbon, Portugal.

The selection of the Navy-Curtiss flying boats came to mean the sending of three flying boats, each carrying four instead of three Liberty motors.

The NC-2 was almost completed when the armistice was signed, and construction had begun on the NC-3 and the NC-4. Work on these two vessels was hurried. It is interesting to note that even with the added effort the NC-4 was not launched at Far Rockaway until April 30, 1919.



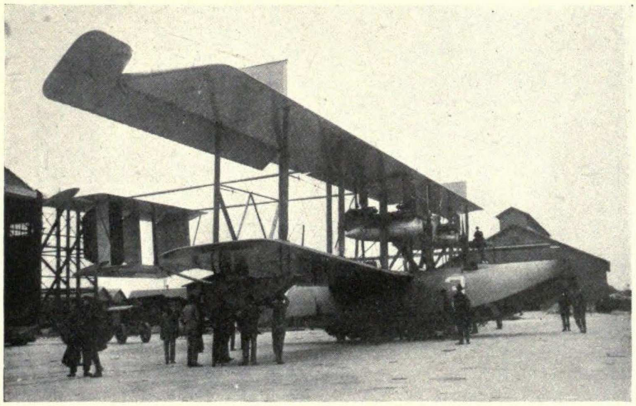
The NC-3 and her Hangar at the Naval Station, Rockaway, L. I.



Crew of NC-1 © International Film Service

Left to right—Lieut. Commander P. N. L. Bellinger, U. S. N.; Lieut. Commander M. A. Mitscher, U. S. N.; Lieut. L. T. Barin, U. S. N. R. F.; Lieut. (j. g.) H. Sadenwater, U. S. N. R. F.; Chief Machinist's Mate C. I. Kesler, U. S. N.; Machinist R. Christensen, U. S. N.

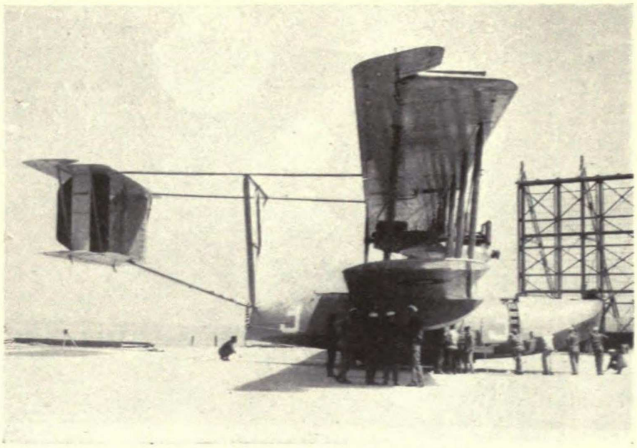
Three motored NC's could have carried sufficient gasoline with which to make the Azores under favorable conditions. The desire however, was, that they should carry more than an adequate supply. It was realized that the relation of motor power to carrying capacity was favorable to the large number of motors. By adding a fourth motor, designers could increase the NC carrying capacity by four thousand pounds, adding but a little over a thousand pounds in actual weight of the motor, bracing, etc. It was a good trade, and the frames of the NC's were sufficiently strong to allow it. The fourth motor was added.



Side view of the NC-3 at the Naval Air Station, Rockaway, L. I.

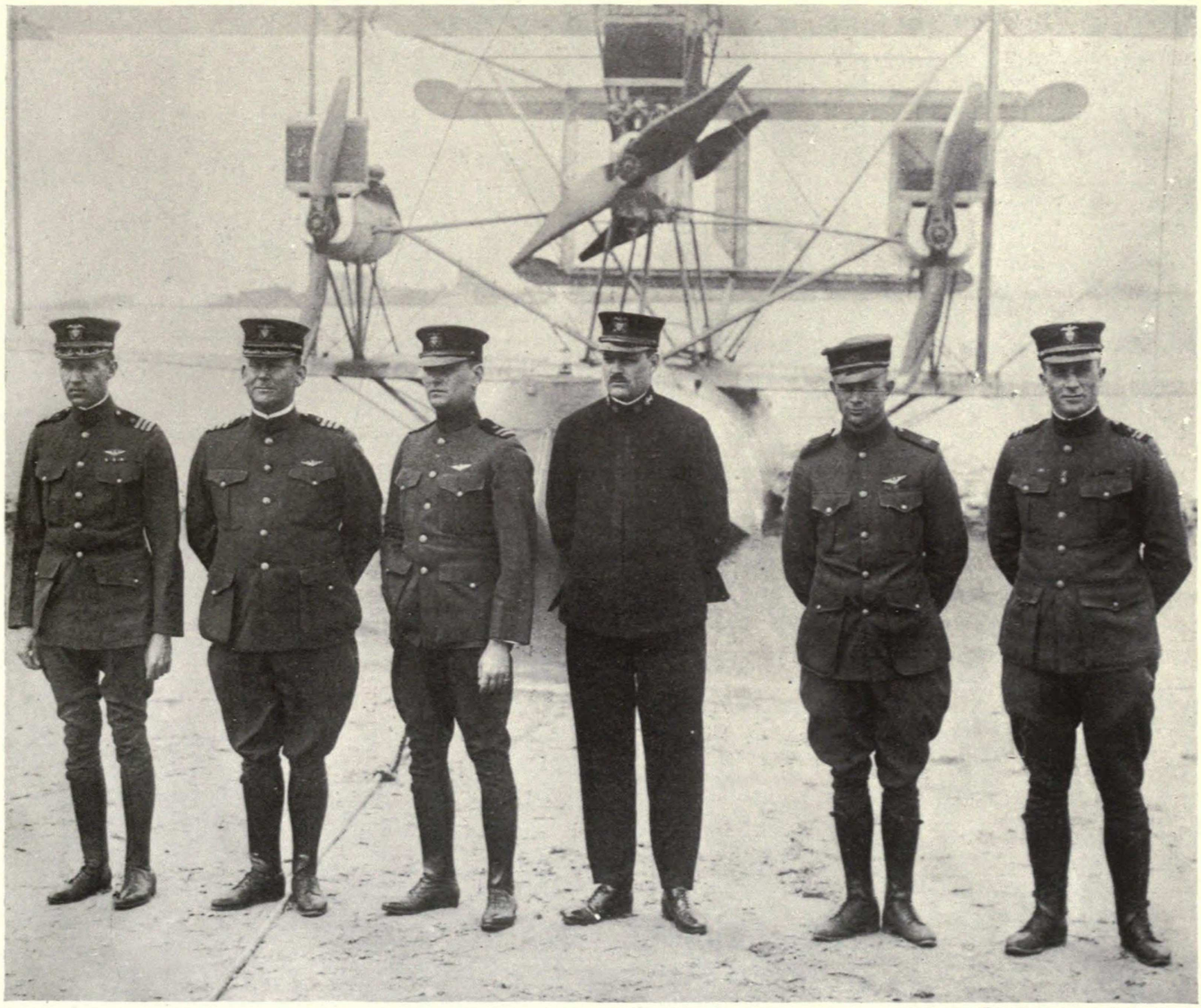
The original NC-1 had three tractors,—i. e., motors whose propellers are before

rather than behind the engine. The NC-2 had been fitted for experiment with a pusher (in the central nacelle) and two tractors. This arrangement was completely and interestingly altered in the NC-2 when a fourth motor was added by incorporating the motors in two nacelles, a motor at each end. The front motor was, of necessity, a tractor and the rear one a pusher. The head resistance of two extra nacelles was thus partly eliminated.



Side view of the NC-3 at Naval Air Station, Rockaway, L. I.

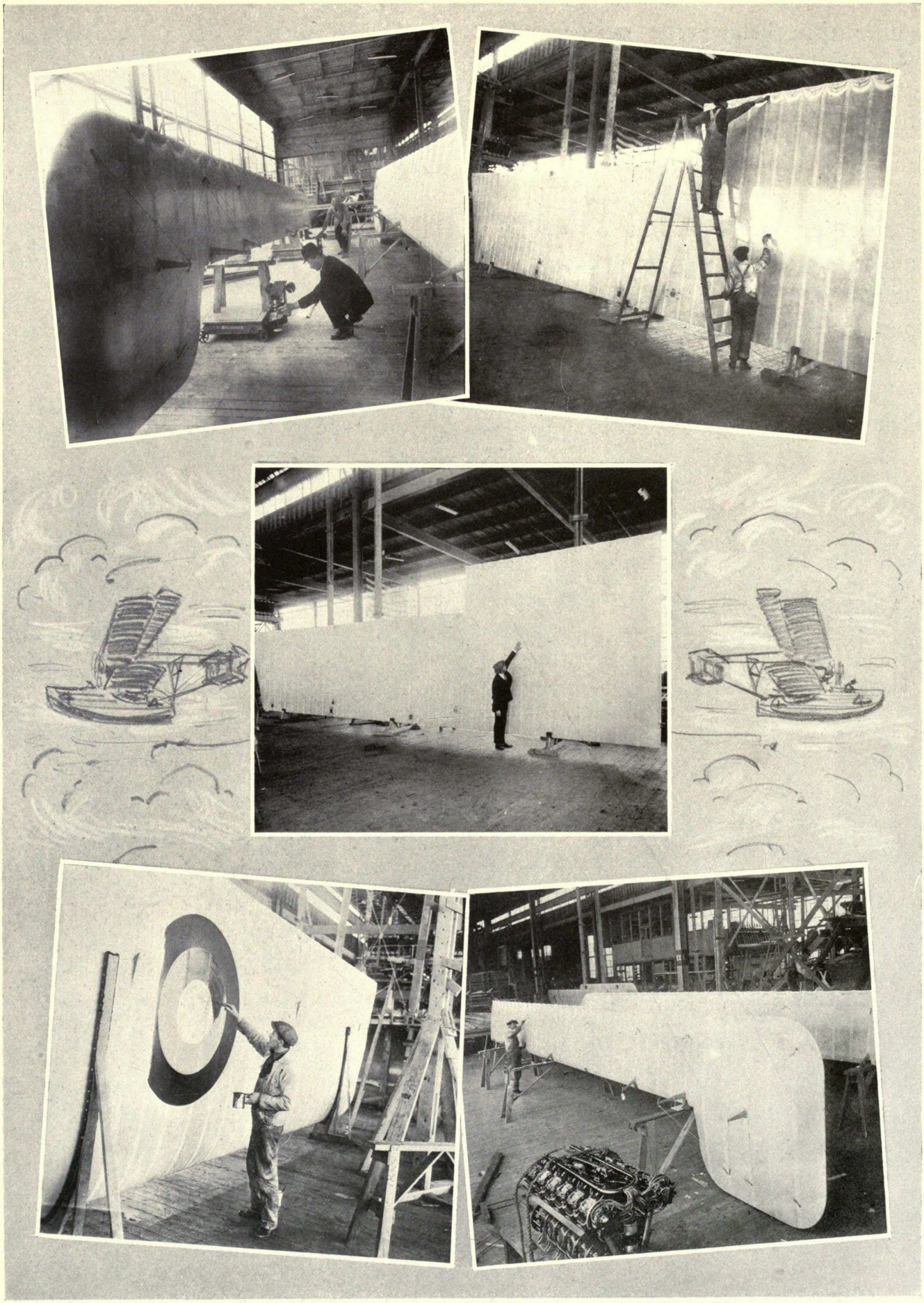
This new arrangement proved successful. Another type of disposition,—three tractors and one pusher, the central nacelle of the type of the NC-2, two others



Crew of the Flagship NC-3

© International Film Service

Left to right—Commander John H. Towers, U. S. N., commander of NC-3 and Trans-Atlantic expedition; Commander Holden C. Richardson, U.S.N., pilot; Lieut. David H. McCullough, U. S. N. R. F., pilot; Lieut. Commander Robert A. Lavender, U. S. N., radio operator; Machinist Lloyd R. Moore, U. S. N., engineer; Lieut. Braxton Rhodes, U. S. N., reserve pilot engineer



Weighing, Doping, Measuring and Finishing the NC Wing Panels and Ailerons

© Underwood & Underwood
Orientating the NC's

single-motored and between the wings, also gave satisfaction.

The NC-1 and NC-3 had both followed this latter form of installation. When the NC-1 was damaged in a storm at Far Rockaway toward the end of March it was decided to fit her with the wings of the NC-2, and equip the NC-4 with the same motor arrangement as the NC-1 and NC-3. Exit the NC-2! Her motor mounting may, however, reappear as the base of six, eight and ten motored aerial liners of to-morrow, where room for engines will be at a premium.

While the saws, files, ovens and dope rooms of the Garden City Plant were busy with the NC-3 and NC-4, the Government was perfecting radio apparatus, lights and instruments for the seaplanes. Commander John H. Towers, U. S. N., who had been placed in command of the expedition, was determining to last details the procedure to be followed by the flyers. To a large degree the course of the expedition was determined by consultation at Washington. On April 14th, Commander J. H. Towers, U. S. N., received orders instructing him with regard to the chief features of the trip. The voyage was to be made with three vessels of the NC-1 type. The course was to begin at Far Rockaway, L. I., follow to Trepassey, Newfoundland, along the path later followed by the NC's, and run from that place to the Azores, either Fayal or San Miguel Islands to Lisbon, and to Plymouth. The trip was to be made during the month of May. If possible the flyers were to take advantage of the full moon of May 14th. In any case the start from Rockaway was to be made as early in May as possible.

Commander John H. Towers, U. S. N.

Commander John H. Towers, U. S. N.

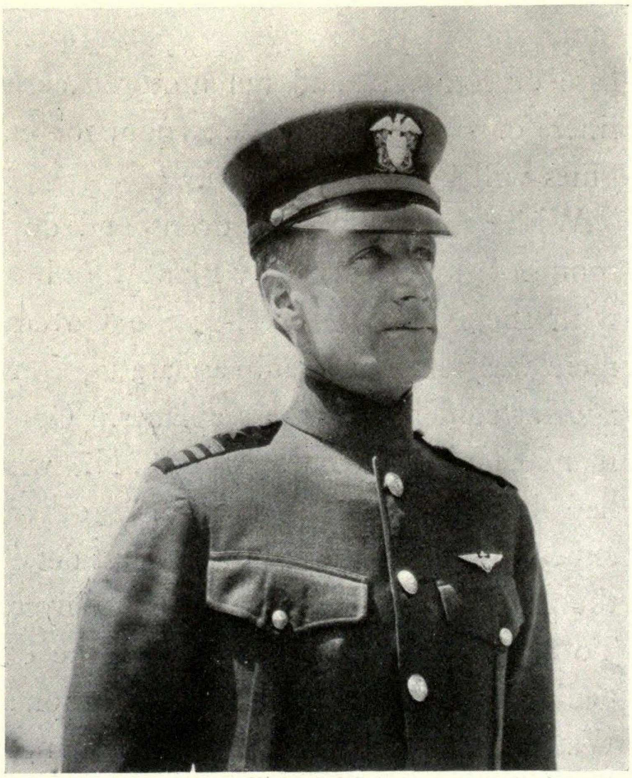
From Rockaway to Trepassey was not to be considered a portion of the main voyage, and no risks were to be taken during this preliminary voyage.

In the latter part of April Commander J. H. Towers, U. S. N., arrived at Far Rockaway. Here he supervised numerous tests made both with F-5-L Boats and with the NC's themselves. Radio apparatus, inclinometers, communication between planes, load capacity and maneuverability, were the varied objects of experimentation.

The behavior of boats and apparatus was encouraging. The behavior of the weather and fortune was vile. Never did catastrophes besiege expedition as they assailed the Navy-Curtiss flight. Late in March a storm, already mentioned, wrecked the wings of the NC-1. For a long period bad weather sadly hindered flying experiments. On May 2d, Chief Special Mechanic E. H. Howard, U. S. N., lost a hand in misjudging his distance from a whirling propeller. On May 4th there were two accidents affecting flying personnel, and in addition a fire, which, breaking out in the hangars at 2 A. M., threatened for a while to demolish both the NC-1 and the NC-3. Considerable repairs were necessary for the NC-1 as a result.

The spirit of the flyers and their associates in the face of these discouragements cannot be better illustrated than by the behavior of Special Mechanic E. H. Howard, U. S. N.

Not only did he treat the loss of his hand lightly, insisting on walking the 300 yards to the hospital for treatment, but, knowing that his accident would cast a shadow on the other members of the crews on the eve of departure, he reappeared at the ways after having received treatment and cried to the commander:



Lieut. Commander Albert Cushing Read, U. S. N.

"I'm all right, sir. I hope there is bad weather for two weeks, for if there is I'll make the trip with you yet!"

* * *

The damage sustained from the fire was quickly repaired. The weather, after a few days' misbehavior, was clear and mild at Far Rockaway on the morning of May 8th.

The crews, now ready for the start, were made up as follows:

PERSONNEL OF NC-3 (FLAGSHIP)

Commanding Officer—Commander J. H. Towers, U. S. N.

Pilot—Commander H. C. Richardson, Construction Corps, U. S. N.

Pilot—Lieut. D. H. McCullough, U. S. N. R. F.

Radio Operator—Lieut. Commander R. A. Lavender, U. S. N.

*Ass't Navigator—Lieut. Commander R. E. Byrd, U. S. N.

Engineer—Machinist L. R. Moore, U. S. N.

*Reserve Pilot Engineer — Lieut. (j. g.) B. Rhodes, U. S. N.

The first eyes to see the Azores from the air

Lieut. (j. g.) W. Hinton, U. S. N.; Lieut. Commander A. C. Read, U. S. N.; Lieut E. F. Stone, U. S. C. G. of the NC-4

PERSONNEL OF NC-4

Commanding Officer — Lieut. Commander A. C. Read, U. S. N.

Pilot—Lieut. E. F. Stone, U. S. C. G.

Pilot—Lieut. (j. g.) W. Hinton, U. S. N.

Radio Operator—Ensign H. C. Rodd, U. S. N. R. F.

Reserve Pilot Engineer — Lieut. J. L. Breese, U. S. N. R. F.

Engineer—Chief Machinist's Mate E. C. Rhodes, U. S. N.

PERSONNEL OF NC-1

Commanding Officer—Lieut. Commander P. N. L. Bellinger, U. S. N.

Pilot—Lieut. Commander M. A. Mitscher, U. S. N.

Pilot—Lieut. L. T. Barin, U. S. N. R. F.

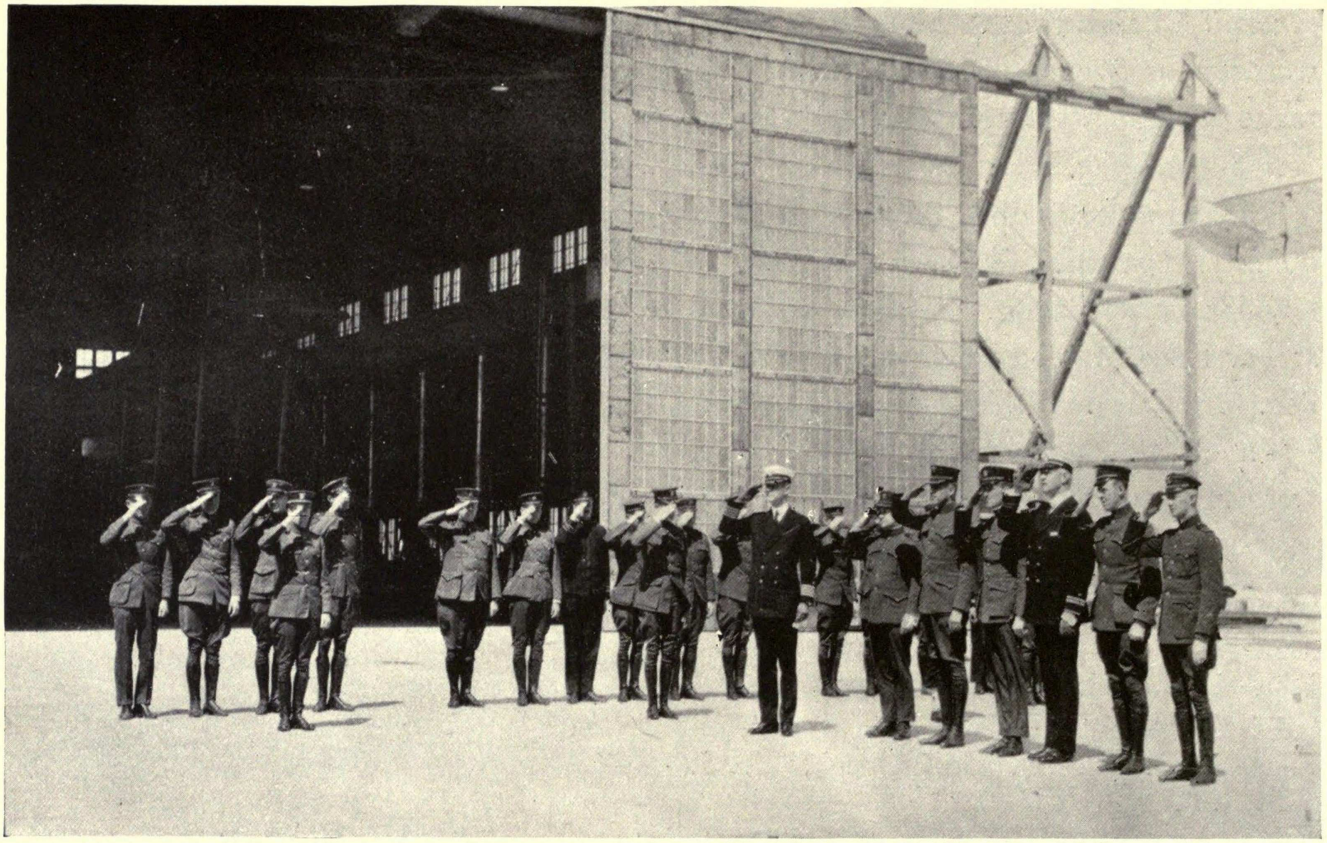
Radio Operator—Lieut (j. g.) H. Sadenwater, U. S. N. R. F.

Engineer—Chief Machinist's Mate C. I. Kesler, U. S. N.

Reserve Pilot Engineer—Machinist R. Christensen, U. S. N.

The three boats had been commissioned on May 3d.

*NOTE—*These men went as far as Trepassey Bay*



Saluting the Colors, at the commissioning of the NC's

The crews, their preliminary difficulties overcome, were ready for flight. They waited for reports from Washington concerning the weather along the northern coast.

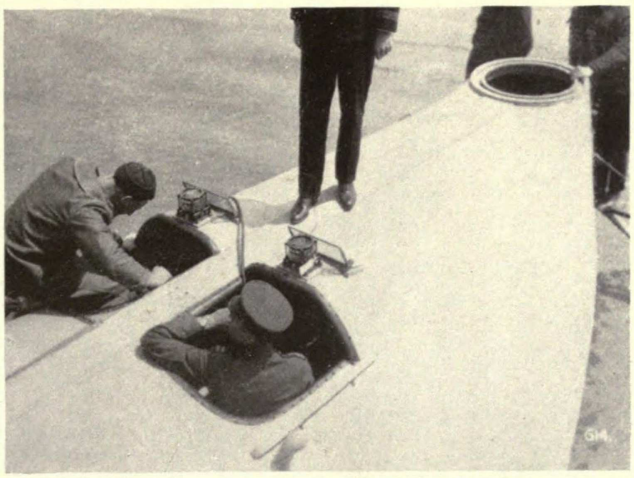
Lieut. Commander P. N. L. Bellinger, U. S. N.
Lieut. Commander M. A. Mitscher, U. S. N.
Lieut. L. T. Barin, U. S. N. R. F. of the NC-1

At 9.30 A. M. Commander J. H. Towers joined the others with a smile.

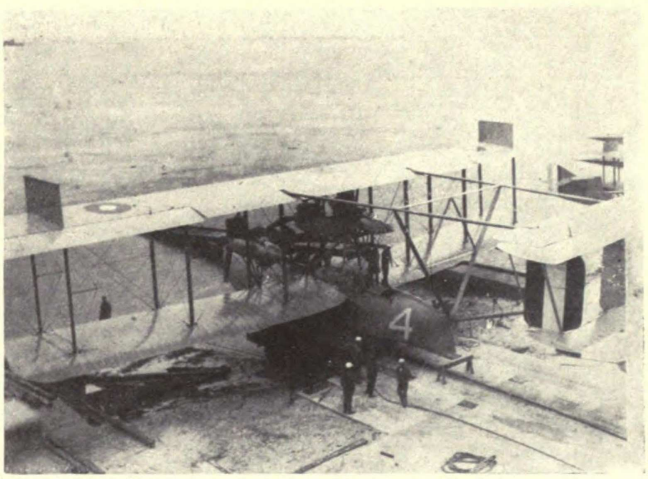
"Well, boys, let's go!"

Instantly all was bustle about the launching ways.

The small crowd, carefully limited to "gobs," journalists and relatives, saw much work and little ceremony. Captain Noble E. Irwin, Chief of the Bureau of Naval Aviation, distributed four leaf clovers among the nineteen men who were soon to take the air. The big boats were drawn into position by tractors and guiding bands of sailors. The crews, hardly able to realize that the hour of starting had come at last, nervously adjusted goggles and telephones over their heads. The pilots gripped their wheels.



Looking down into the Pilot's and Navigator's Cockpits

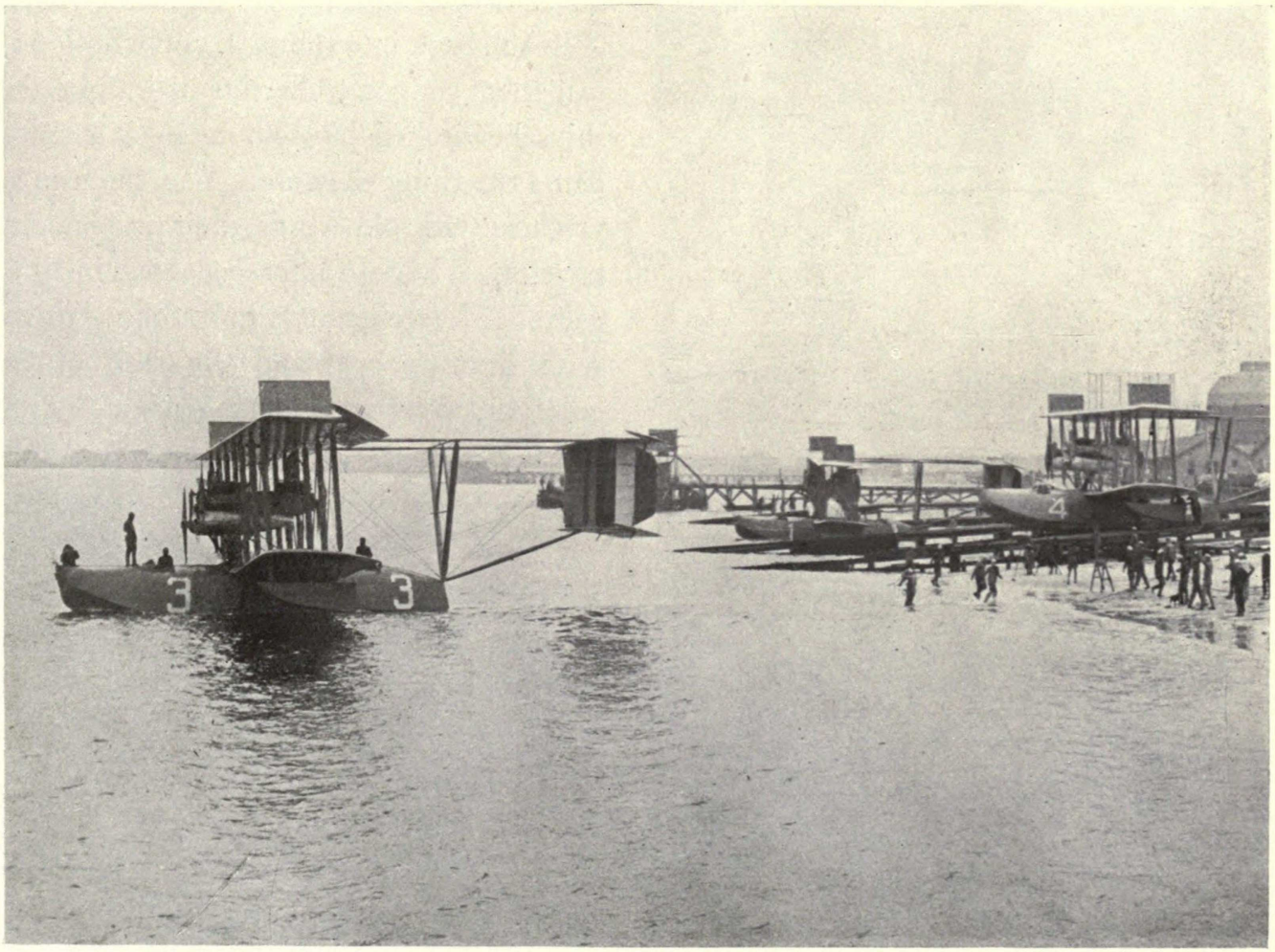


Looking down on the NC-4

9.57 A. M.!

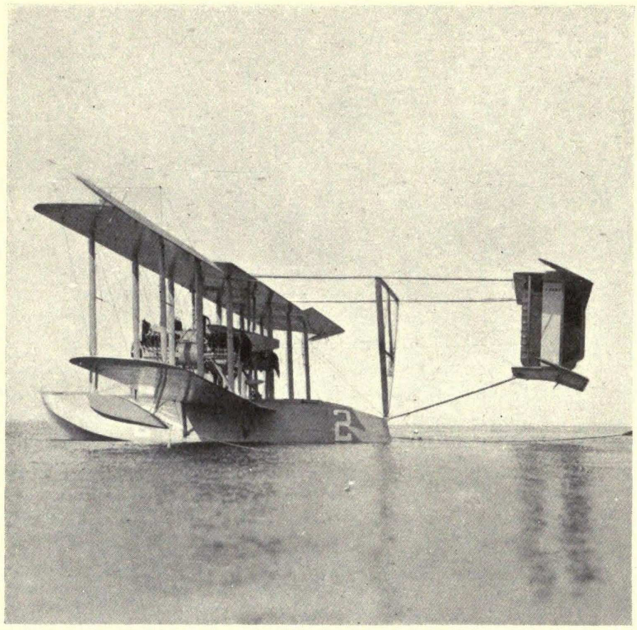
With a roar the four motors of NC-3 broke an electric silence. The flying boat shot down the ways and was taxied into the bay. The NC-4 and NC-1 followed; at 9.59 all were in the water.

There were a few minutes of maneuvering to warm up the motors. Then, with a tail of foam flashing behind her, the "Three" headed down the long stretch of water, the foam lessening as she went and finally changing to a thin white space



The Three Ships—Ready to hop off from Rockaway

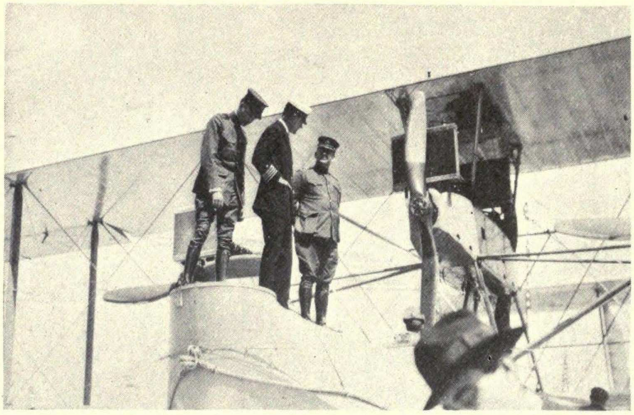
Photo, Edwin Levick, N. Y.



The boat they left behind them—NC-2 at Rockaway

Lieut. Commander A. C. Read, U. S. N. studying the charts just before the start from Rockaway

between the seaplane and the gray water. The others had followed. Soon the great boats cut the skyline in a majestic procession. Deliberate, incredible, they turned eastward and sailed into the farthest haze.



Captain Craven and Commander J. H. Towers, U. S. N., and Commander H. C. Richardson, Construction Corps, U. S. N., talking it over at Rockaway before the start

Reach back into the past, you who look, call them dragons, chariots of immortals, ships bewitched by demons—you cannot name the thing they are. You cannot reproduce with old words their stupendous novelty. They go unprecedented, incomparable. Watchers can only follow them with lighting eyes and the rush of an emotion strong and inexpressible.

IV—Eastward Ho!

FROM Far Rockaway, L. I., to Trepassey, Newfoundland, is a distance of approximately 1000 nautical or 1150 statute miles.

The three NC planes had all covered this distance by May 15, the NC-4 arriving six days after the NC-1 and the NC-3. Engine trouble had made it advisable for her to descend near Cape Cod. She alighted on the open sea, taxied for five hours, and brought herself, as efficiently as if water and not air had been her natural medium, to the Naval Air Station at Chatham. By May 10th she was ready to resume flight. Favorable weather at 11.17 A. M. on May 14 found her receiving a message from Assistant Secretary of the Navy Roosevelt: "What is your position? All keenly interested in your progress. Good luck!" and replying three minutes later, "Thank you for good wishes. NC-4 is 20 miles southwest of Seal Island, making 85 miles per hour."

Conditions at Trepassey not having been propitious for flight, the NC-1 and the NC-3 had been delayed there since their arrival on the evening of the 9th. When the NC-4 arrived she was immediately overhauled. A new engine was installed, three new propellers were attached, and a general overhauling given the seaplane. On May 16, 1919, all three boats were ready to start. They had fulfilled almost to the letter the suggestion of their April 14th orders that they take advantage of the May 14th moon.

The long, narrow harbor at Trepassey is not favorable for a flying boat take-off. Indeed, Commander H. C. Richardson, Pilot-Commander, Construction Corps, U. S. N., reconnoitering on the forenoon of the 16th, found the waves toward the farther end too high to warrant a start. In the afternoon, however, they subsided, and a take-off was planned.

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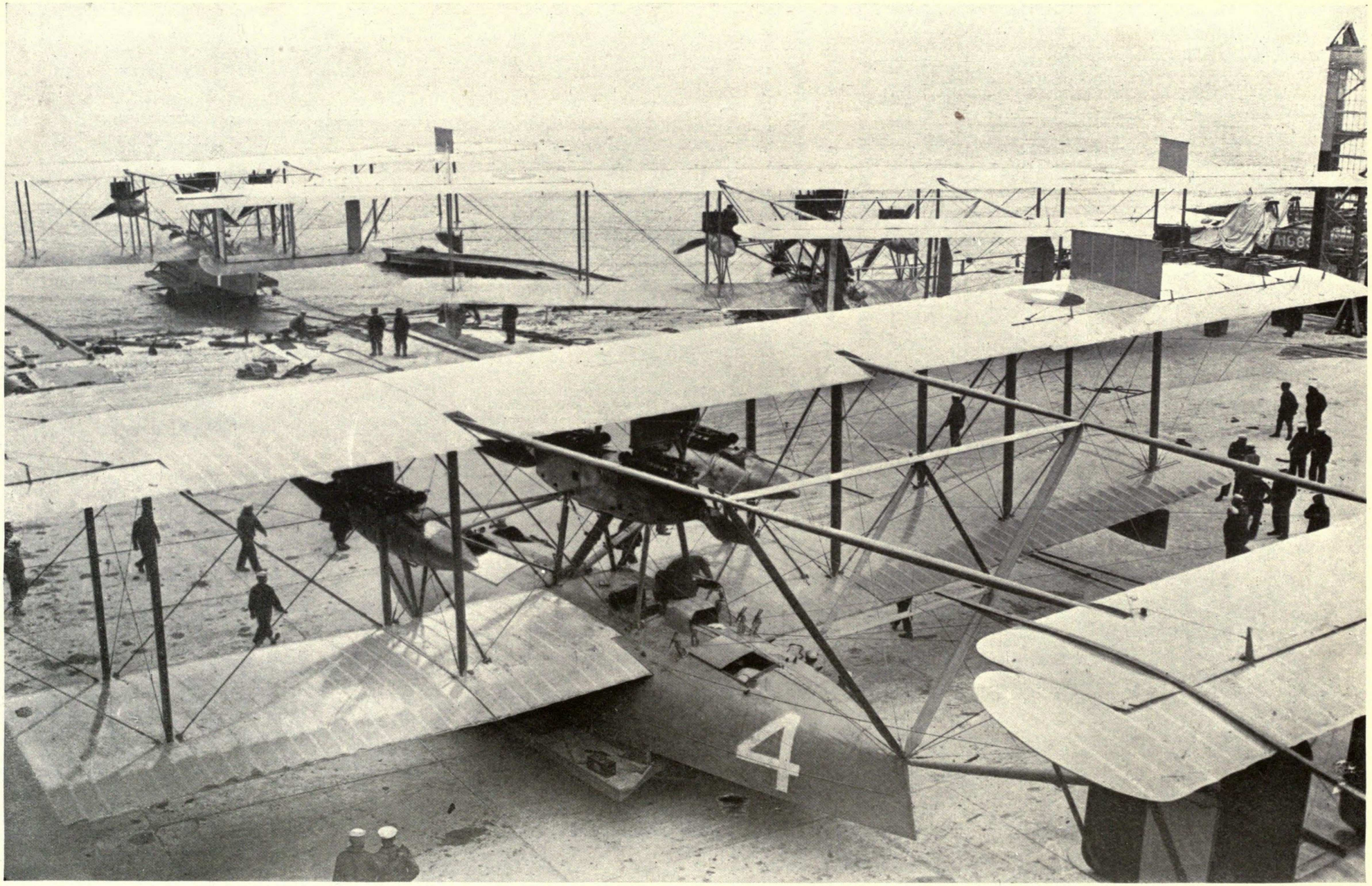
A Trial Flight at Rockaway, L. I.



The "Fleet" before the Start, Rockaway, L. I.

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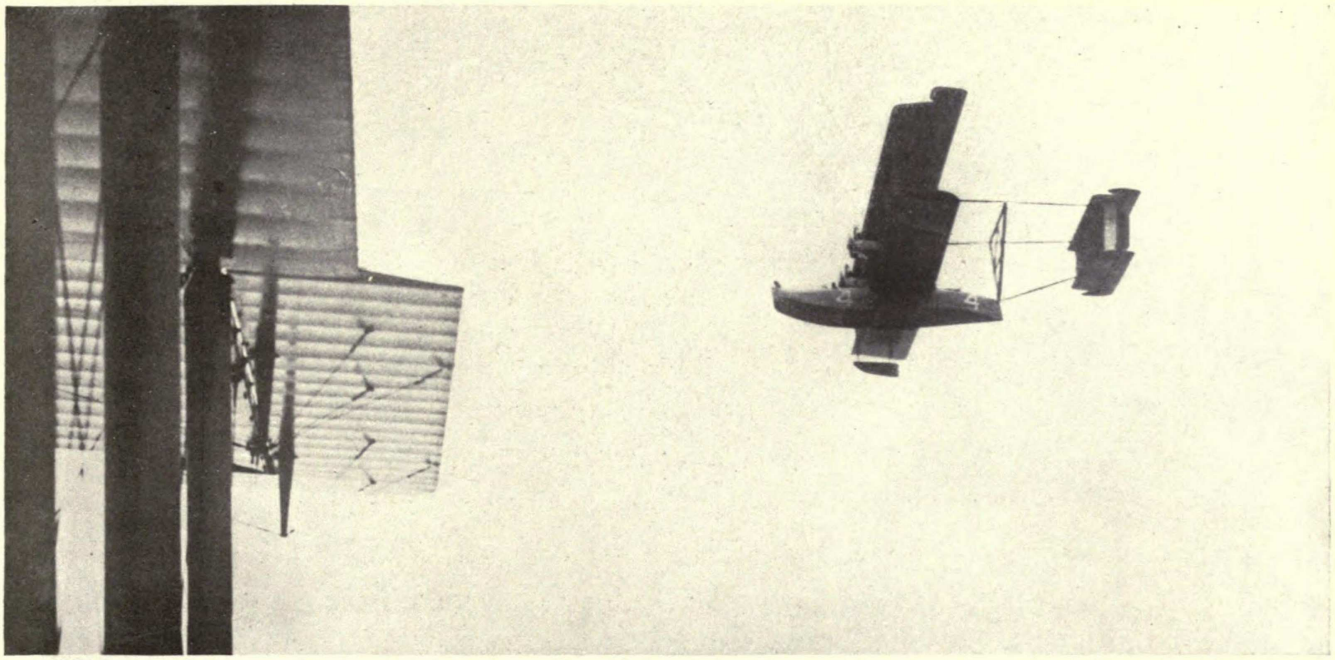

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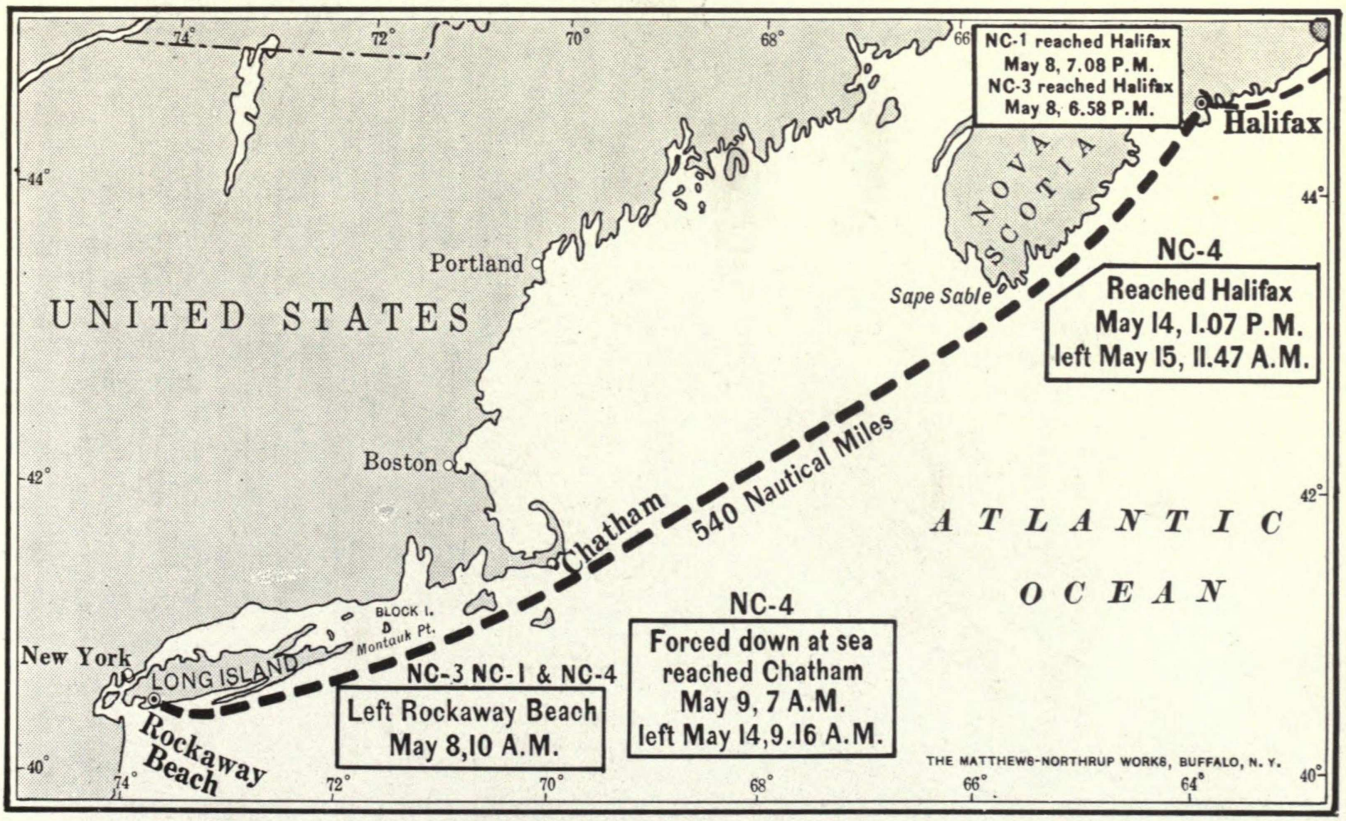
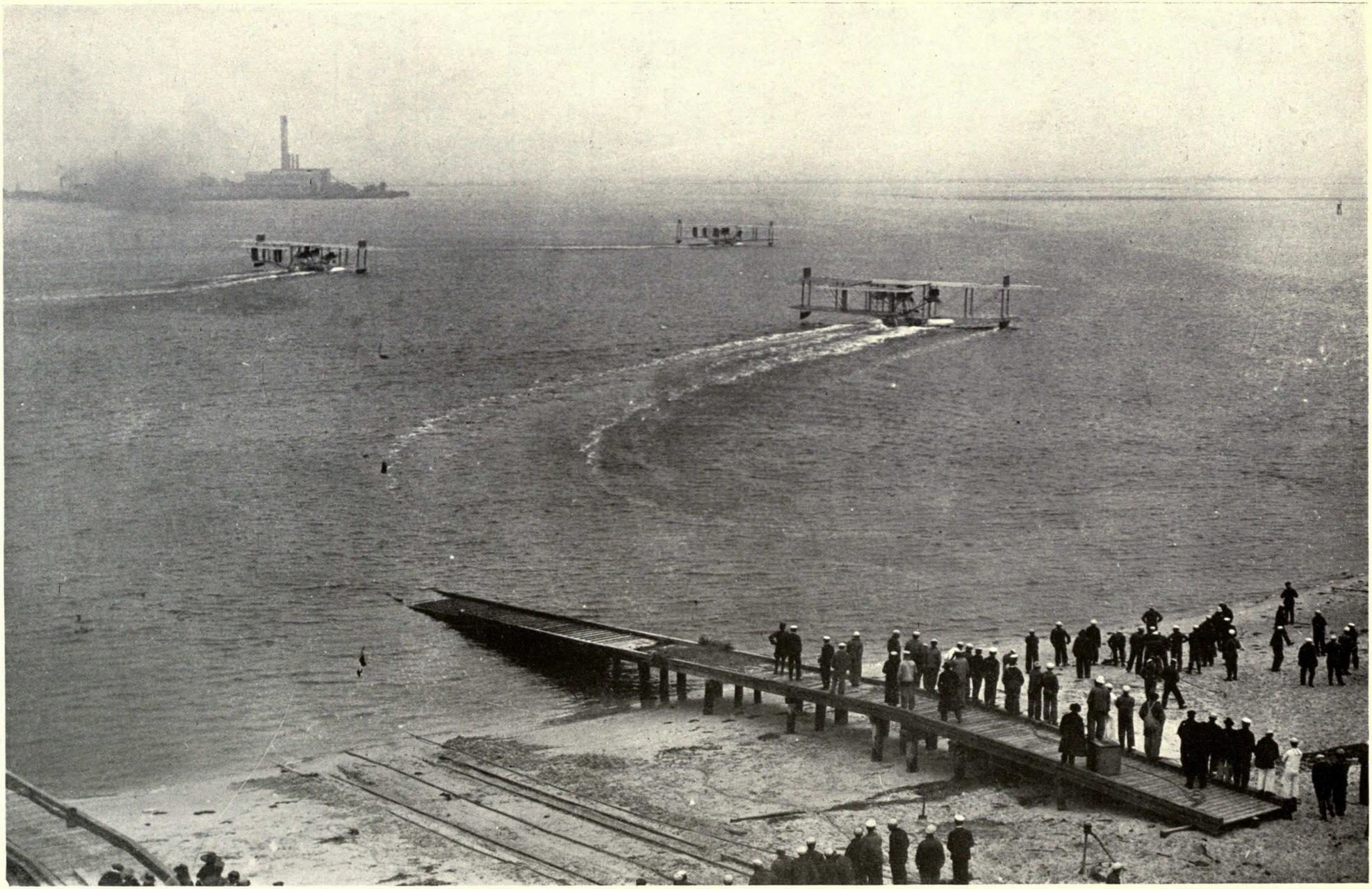
"She's Off." A remarkable photograph of the NC-4 taken from a naval flying boat

The tenders, *U. S. S. Prairie* and *U. S. S. Aroostook*, at once began preparations to start for Lisbon. The NC crews prepared for flight, slipping their air togs over Naval Aviation uniforms. They wore a combination of silk socks under woolen ones, and fur-lined boots and hoods, but used no electrically heated suits.

Trepassey had poured out her population, native and transient, to witness the



First Leg, U. S. Navy Flying Boats NC-3, NC-1 and NC-4 from Rockaway, N. Y., to Halifax, Nova Scotia
(Time given is New York Standard)



Photo, International Film Service

"They're Off"

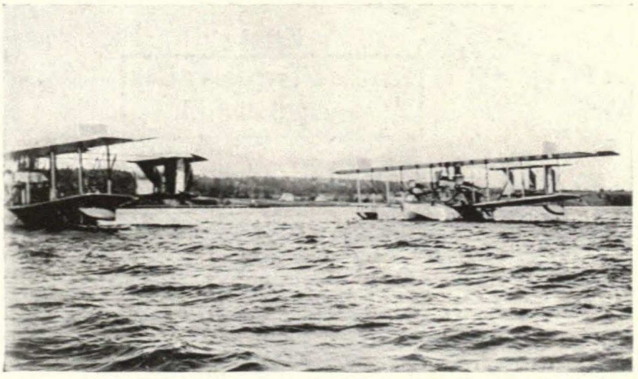
departure. The town was as empty as an inverted pitcher. Shore and water were darkened with spectators. On the destroyers were crowded Naval officers, sailors, and newspaper correspondents. Commanders Towers, Read, and Bellinger, fresh from a last minute rehearsal of procedure, sat alert aboard their ships, runners crouched on a viewless, cosmic cinderpath. A gig with Captain Crenshaw, the base commander, and Captain Ghent of the *Prairie*, darted out for last goodbyes, keeping a cautious distance from the precious planes.

Now they waited the word.

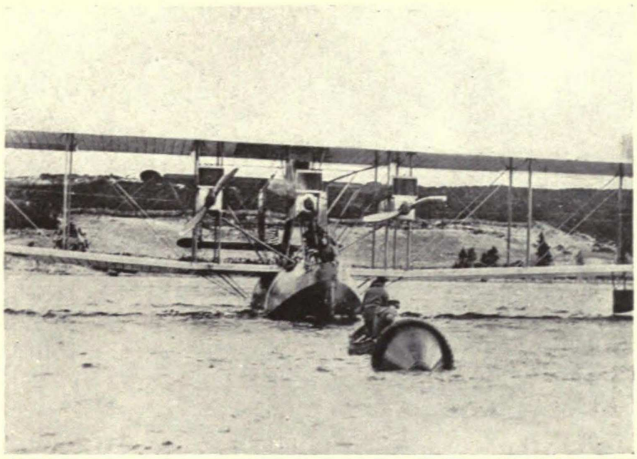
"Let's go!" shouted Commander Towers.

The motors of the NC-3 began to revolve. In the bright sunlight—it was six o'clock New York time—the three vessels taxied out, maneuvered a few minutes, and then, the NC-3 in the lead, shot forward for flight. They left at 6.06, 6.07, and 6.09 P. M., the NC-1 bringing up the rear.

The course was open sea. There were no rivers or railroads or coastlines to follow, no towns or lakes to identify. Only a line of sixty destroyers, clicking advice and brandishing stiff antennae of



© Western Newspaper Union
NC-1 and NC-3 at Halifax



U. S. Naval Air Service
NC-1 at Anchor in Trepassey Bay

light, would break the empty sweep of that sea.

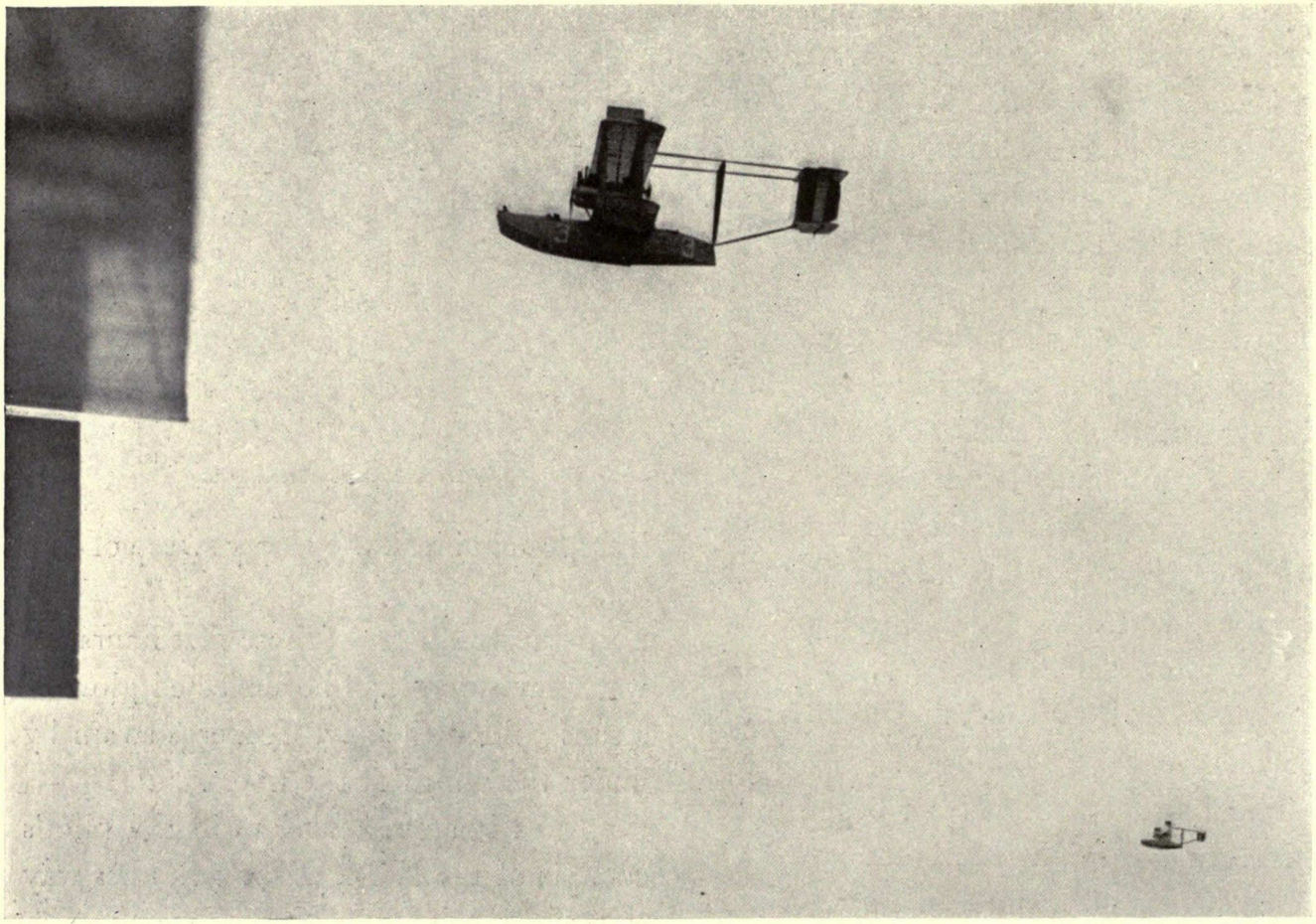
In the late light of those first hours the water lay smooth. The deflected glow of a sunset filled the sky. Icebergs swam by under the wings of the flyers.

Let us imagine ourselves in the pilot's cockpit of the NC-4 as she takes her way eastward six hundred feet above the sea.

The fading light shows us the NC-3 ahead, rising and falling in the changing air as if on the slow, high waves of an invisible sea. All sound is merged into the roar of four motors. All about us is a sense of space,—open, illimitable, so vast that we seem shaken free forever from the earth, and winging in a new world whose laws are alien to all we have known.

Before us is the board of instruments,—clocks, compass, oil and water meters, altimeter, tachometer, inclinometer. Below us and to the rear works the wireless operator. Far back in the hull, under the wings, are the mechanicians.

The plane flies on through a growing darkness. The NC-3 disappears. We have switched on our lights, and send a message to her asking that she turn on hers. No response. Something seems to be wrong.



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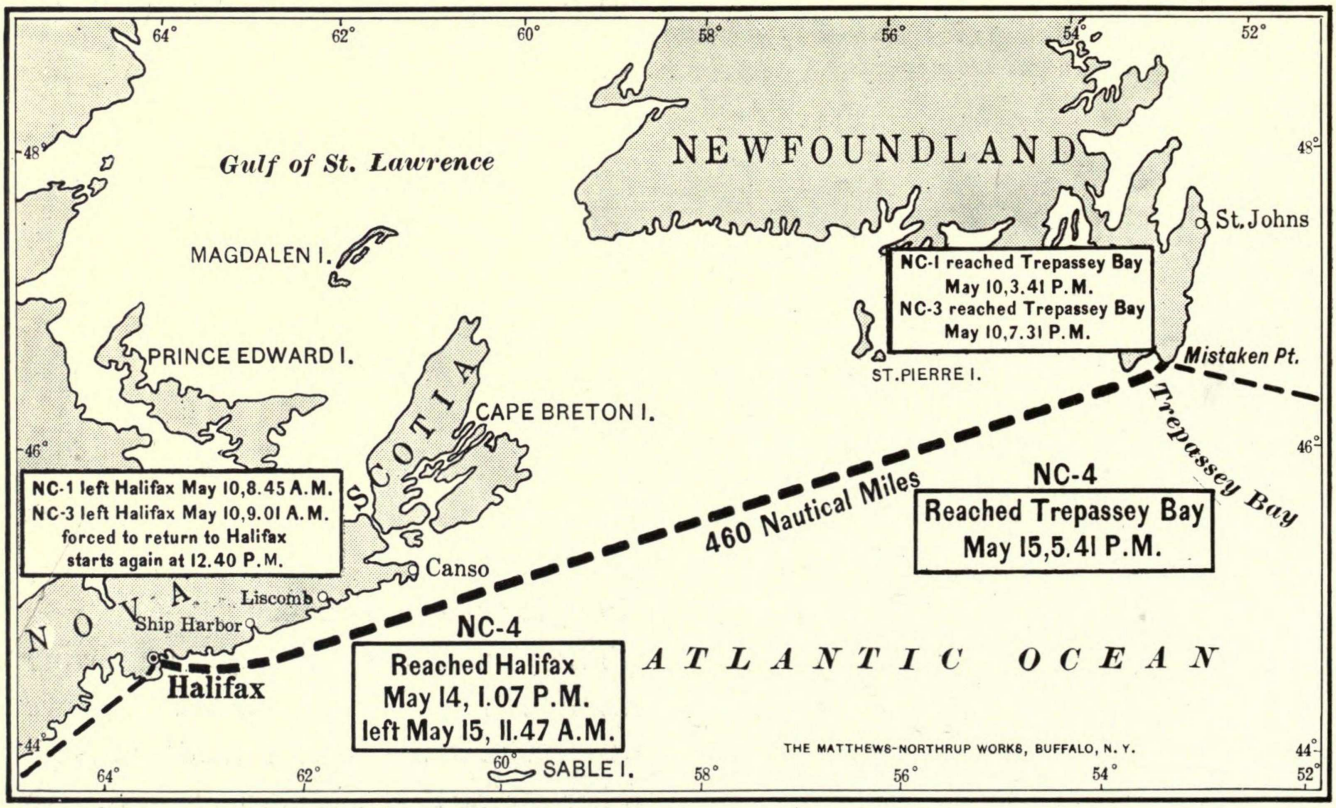
NC-3 and NC-1 in the air. A photograph taken from a naval flying boat



Second Leg, U. S. Navy Flying Boats NC-3, NC-1 and NC-4 from Halifax to Trepassey Bay, Newfoundland

(Time given is New York Standard)

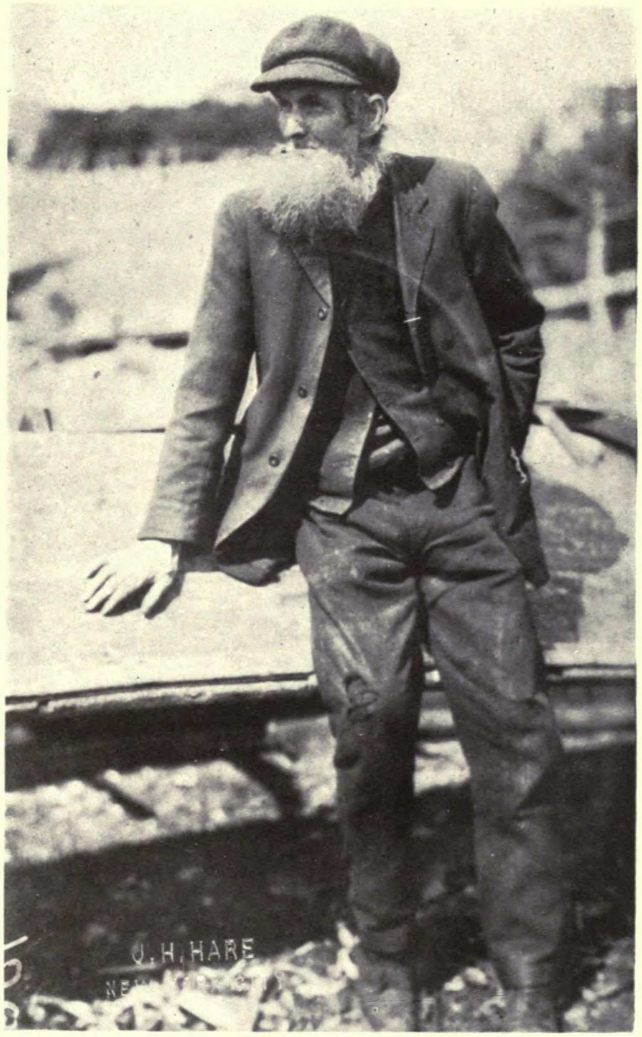
We look back for the NC-1. Never distinct, she, too, has disappeared. We are alone, with 1185 nautical miles still to go.

The sky is now dark, utterly dark save for stars. These and the line of ocean where the stars cease give the pilot his only means of orientation. The engines labor on. Each of the twelve exhaust ports, unmuffled, sends out its jet of flame as the burnt gas is expelled. In the vastness and invisibility of the time and place those red tongues, each proclaiming the adequacy of its cylinder eight hundred and fifty times a minute, are marvellously reassuring.

Now, ahead of us, a swift, narrow stem of flame runs up the sky, bursts into flower, and scatters luminous petals across the night. The star shell of a destroyer! In a minute gem-like lights gleam below, and an illumined figure glowing on the deck of the vessel tells her number and gives us our location. Check her off the chart!

The plane, winging her way at a thousand foot elevation, now catches on wing and motor gleams of silver thrown from the east. An edge of moon has appeared. Soon the whole disc has arisen, flooding the world with pale beauty. The pilot, visibility increased ten-fold, relaxes with a sigh. To the south, however, a close, surprising shape brings him back to tenseness with a jerk. Another plane flies close, too close for comfort. The NC-4 veers aside from the friendly but dangerous shape, and is soon alone once more. Probably she has passed the NC-3.

So we might ride until the day dawns faintly. The story for the three boats is



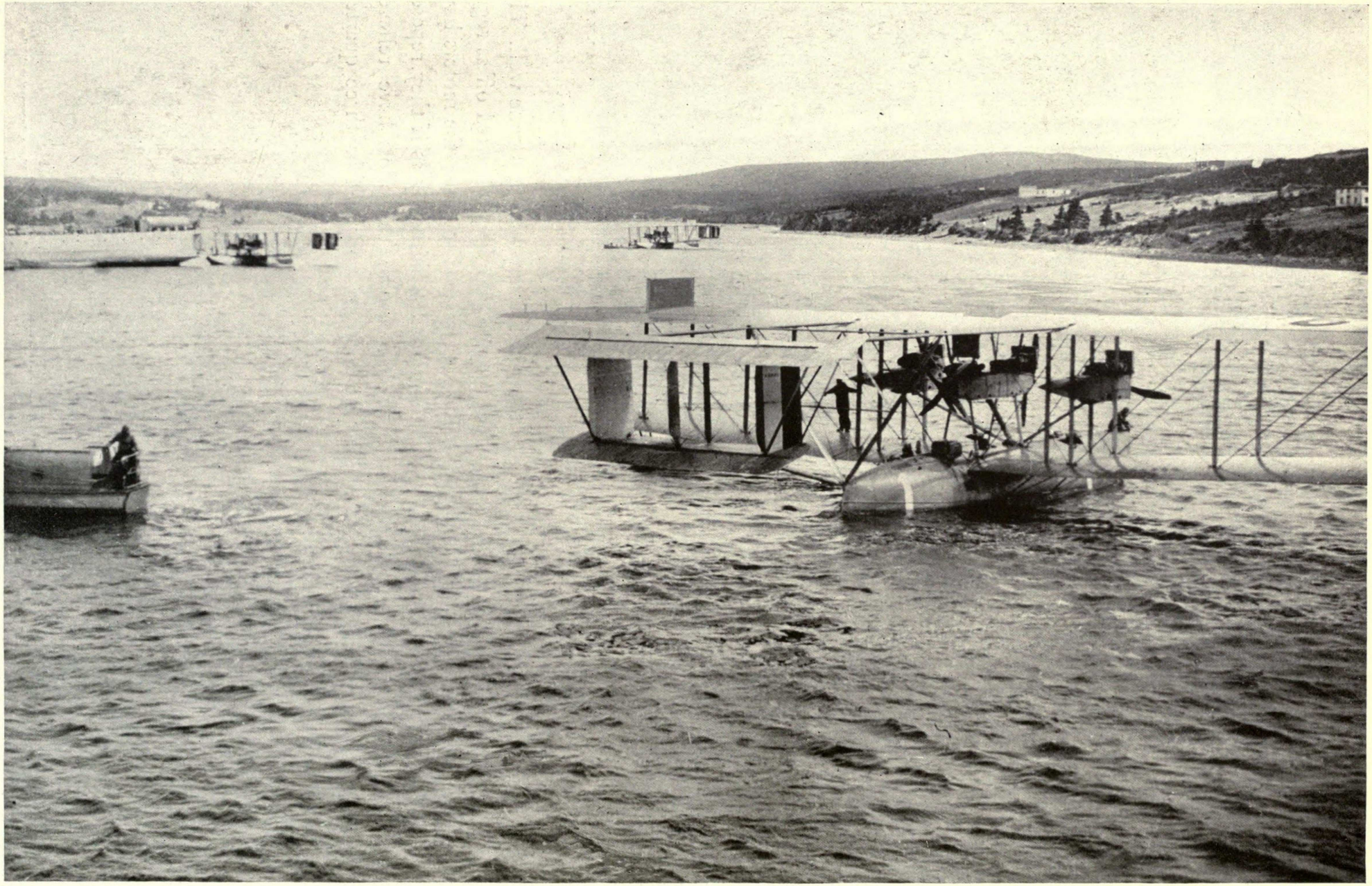
Photo, J. H. Hare

"Assimilation"
But,—the wind blew through his whiskers just the same

the same. Everything has gone well. The destroyers have been checked off as regularly as railroad stations; the motors have functioned as faithfully as if they reposed on test blocks; the pilots have relieved one another every half or three quarters

Photo, International Film Service

"There She Comes"



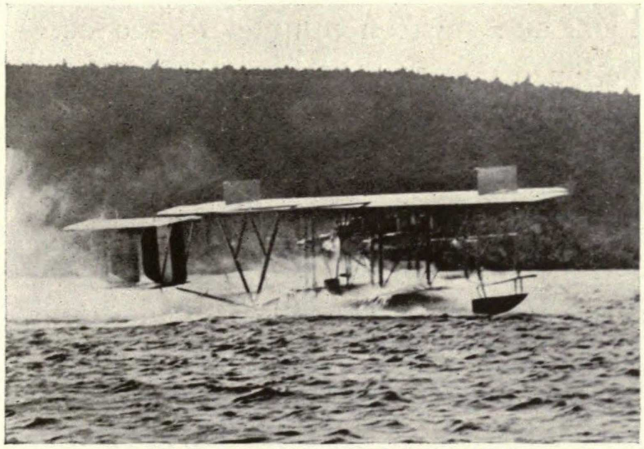
The Three NC Boats in the Bay of Trepassey

© International Film Service

of an hour. Toward morning there have been sandwiches and coffee, welcome after the long, cold, nervous time of comparative inaction.

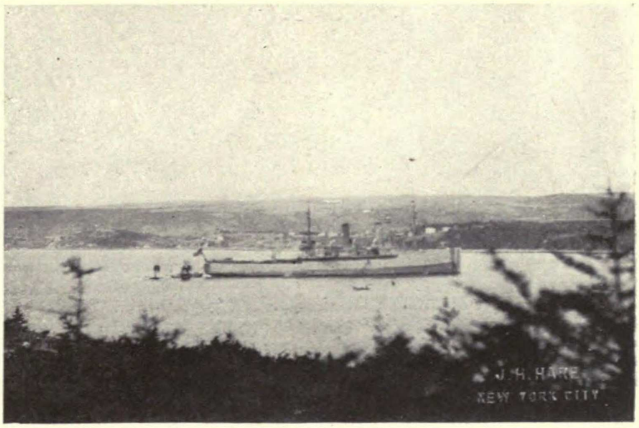
Now, however, was to come a period of difficulty.

The NC-4, says her commander's record, passed destroyer No. 15 before trouble began. Ahead of this vessel appeared what seemed an area of rain, but proved to be fog, driving in the same direction as the NC herself. Picking up destroyer No. 16



Landing in Trepassey Bay U. S. Naval Air Service

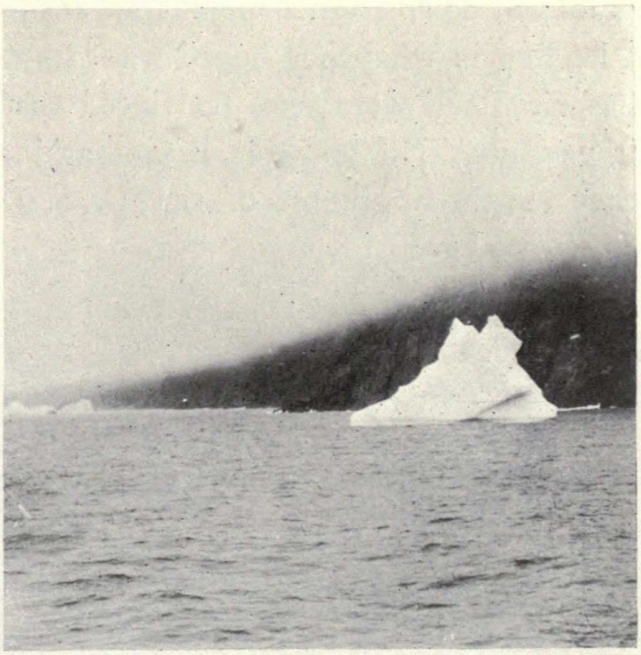
in spite of poor visibility, the NC-4 missed No. 17, and for a time flew confusedly. The boat seemed to be making a steep bank, the compass whirling aimlessly about, and visibility merging into a gray blanket of moisture. Finally, however, she emerged from the fog, and flying at 3000 feet in sunshine and blue sky, seemed to have outwinged her difficulties, though a white plateau of billowing vapor below showed that the surface of the ocean was still shrouded in mist. Clouds and fog soon appeared above as well as below, and the NC-4 sent inquiries as to surface conditions. Destroyers 19 and 20 reported discouragingly, but No. 21 announced that



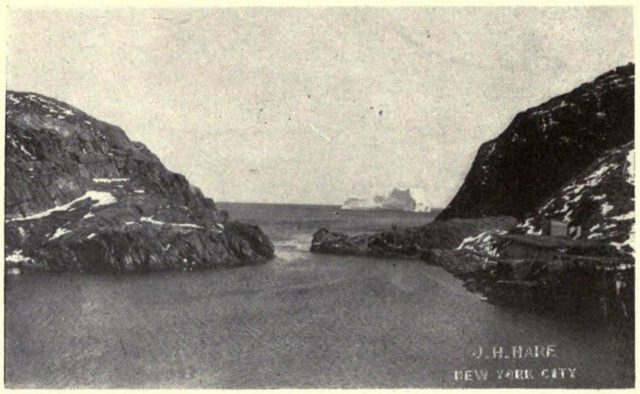
"Trepassey Country" Photo, J. H. Hare

there was a ten-mile visibility, and the flying boat descended. Flying low, her commander soon saw what he thought to be tide waves. Suddenly, above one of these waves appeared a dim line of rocks. They had found Flores! Delightedly they skirted the coast. "And," says Commander A. C. Read, "as we rounded a point a peaceful farmhouse came into view in the midst of cultivated fields on side hills. That scene appeared to us far more beautiful than any other ever will."

Elated, reassured, the crew thrilled with revived hopes. "We were now feel-

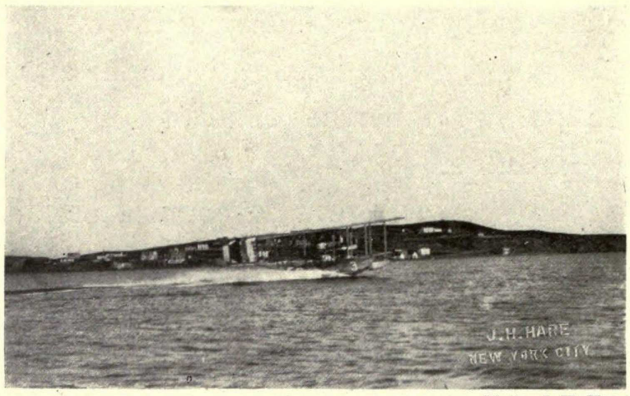


"Newfoundland Fog"—off Trepassey Photo, J. H. Hare



Photo, J. H. Hare

The "Take-off" Country



Photo, J. H. Hare

NC-3 Starting from Trepassey

ing quite cocky. . . . The engineer assured me there was sufficient oil and gas left to make Ponta Delgada. Why stop at Horta then?"

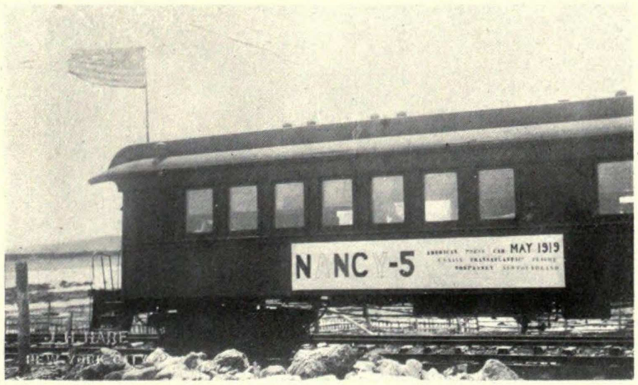
Their jubilation was brief. Dense fog closed in again. They missed Destroyer No. 23. "No Ponta Delgada for us to-day; any port would look good."

They had begun calculations as to the course necessary to find land, when a hole in the fog disclosed the northern sweep of Fayal Island. Horta, to the south, must be just around an aerial corner! The plane flew down the coast, and, pitching through rough air which "tumbled down from a mountain," made a landing in what they hoped was Horta harbor. They were soon convinced that it was not. No matter! Rising again, they caught a glimpse of the *U. S. S. Columbia*, visible between gusts of obliterating fog. In a moment they had reached her, and swept down at the end of fifteen hours and thirteen minutes to the completion of the first and most difficult stage of the great crossing.

Not so fortunate the NC-1 and the NC-3. The "Three," by dawn some distance behind Lieut. Commander A. C. Read, U. S. N. and his boat, had sighted no destroyers since No. 13.

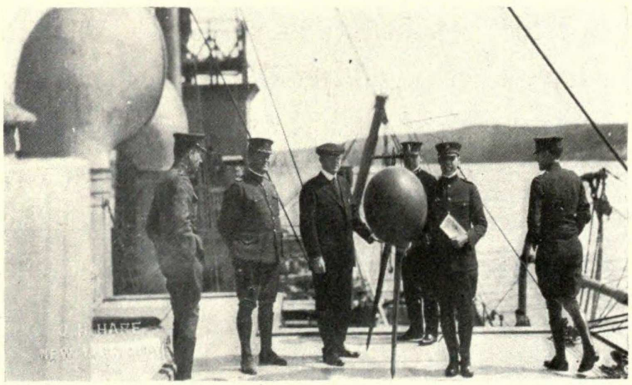
"We passed," says Commander H. C. Richardson, one of the NC-3 pilots, "through five hours of rain squalls and fog, so thick at times as to make it impossible to see the horizon or the surface of the ocean."

After this experience, with fifteen and a half hours of travel behind her, the NC-3 was contemplating a landing forty-



Photo, J. H. Hare

The "Home" of the Scribes at Trepassey



Photo, J. H. Hare

Taking Weather Observations at Trepassey

The NC-4 taxying to her moorings, Ponta Delgada Harbor, Azores

© Underwood & Underwood

five miles southeast of Fayal. The NC-1, last of the three to start, held her original position with reference to the others.

"We did not meet any trouble," says Lieut. Commander P. N. L. Bellinger, U. S. N., "until we got into the fog at 11.10 A. M. (Greenwich Mean Time) Saturday, when we were near Station 18."

Once in the fog, the NC-1 lost her bearings, and decided to alight. She did so at 1.10 P. M. She was then about 100 miles west of Flores. The position of the NC-3 almost two hours earlier has been noted. Both vessels were at the gates of the Azores. Their motors were in perfect condition. They had adequate supplies of fuel for several hours further flight. Fog alone prevented them from reaching Fayal or even Ponta Delgada.

In landing, however, both boats found the ocean heavier than they expected. They sustained damage from high waves which made the resumption of flight impossible, even if a take-off on so heavy a sea could have been managed. The NC-1, after taxying on the surface for five hours, was discovered shortly after 6 P. M., Greenwich time, by the *Ionia*. At 6.20 P. M. the *Ionia's* boat took off the crew.

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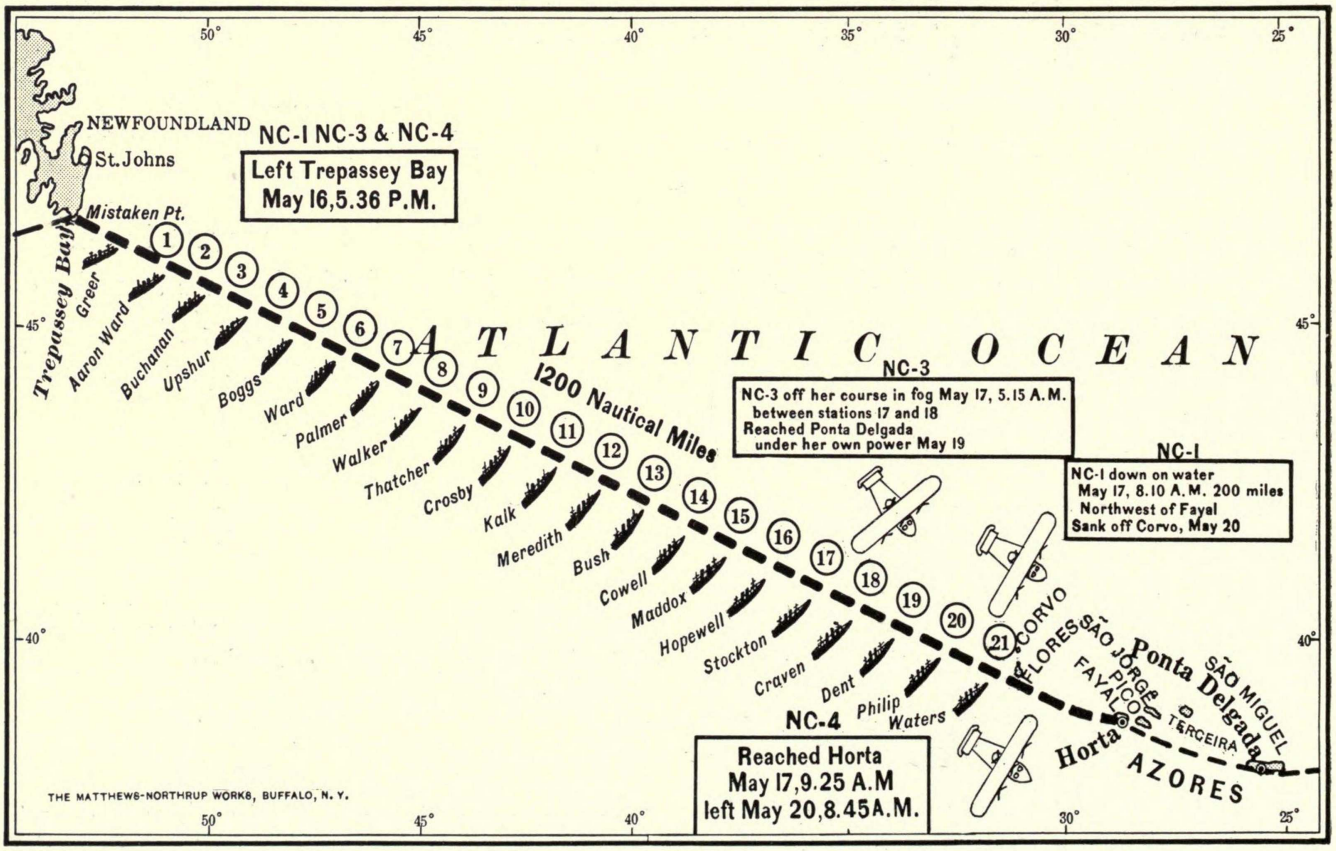
Commander J. H. Towers, U. S. N., and his crew after their terrible battle with the sea off the Azores



Third Leg, U. S. Navy Flying Boats NC-3, NC-1 and NC-4 from Trepassey Bay to Azores.
(Time given is New York Standard)

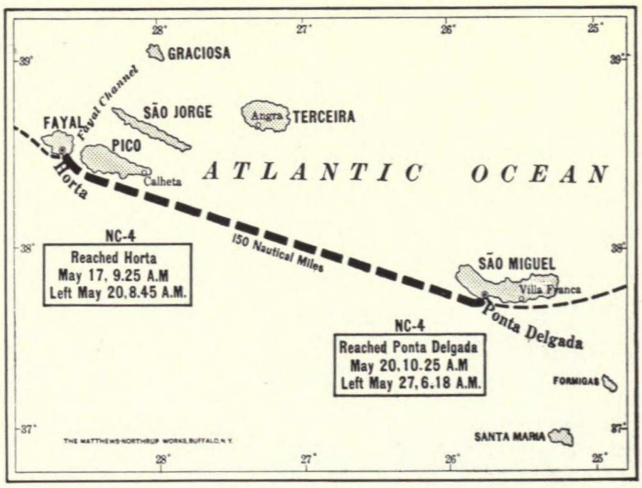
U. S. Naval Air Service

CREW OF THE NC-4 AT AZORES

From left to right—Pilot, Lieut. F. F. Stone, U. S. C. G.; Chief Machinist's Mate, E. C. Rhodes, U. S. N.; Pilot, Lieut W. Hinton, U. S. N.; Ensign H. C. Rodd, U. S. N. R. F., Radio Operator; Engineer, Lieut. J. L. Breese, U. S. N. R. F.; Lieut. Commander A. C. Read, U. S. N.; and Admiral Jackson

An attempt was made to tow the seaplane, but the line broke, and after a time the first Navy-Curtiss flying boat disappeared beneath the waves.

Meanwhile, the twelve foot sea on which the NC-3 came down damaged hull, struts and control connections. It was apparent that she could not take the air again. Her radio system, though allowing her to receive messages, could not effectively send them. Though the crew fixed her position as forty-five miles south-

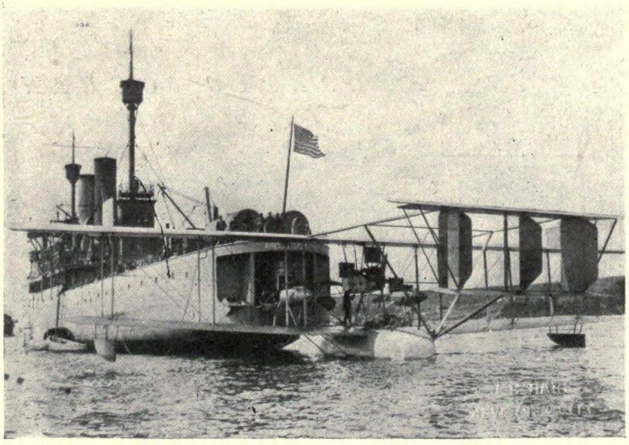


Fourth Leg, U. S. Navy Flying Boat NC-4 from Horta to Ponta Delgada, Azores
(Time given is New York Standard)

Photo, Edwin Levick, N. Y.

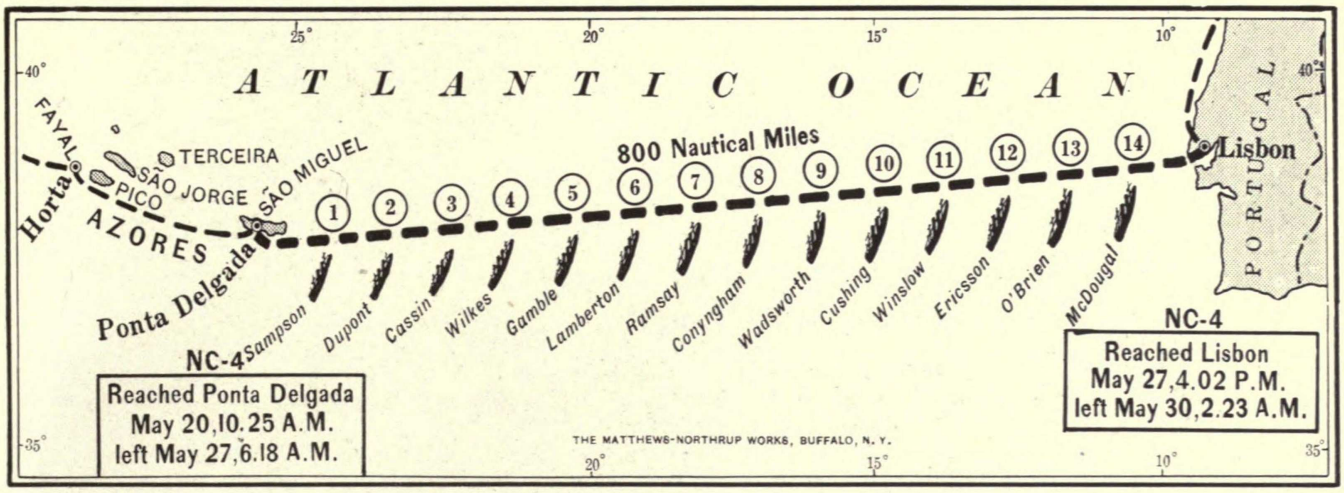
Lieut. Commander A. C. Read, U. S. N., and the crew of the NC-4 after the flight

west of Horta, the wind forbade an attempt to taxy in the known direction of Fayal. The only possible course seemed one with the wind, i. e. eastward, which, it was calculated, would carry the NC-3 to San Miguel.



The "Mother Ship" *Aroostook*

Night came, and the boat was buffeted by wave and rain. One of the elevators, badly damaged, had to be cut loose. The crew took turns steering, those off duty attempting to sleep. With morning, in the twenty-second hour of surface riding, the left wing tip was washed away. One of the crew crawled out on the right wing and clung there, deluged occasionally by waves, to keep the left wing from being submerged. Radio messages were received telling of the rescue of the NC-1 crew, but also disclosing to the NC-3 that those who were searching for her were looking west instead of south of Flores. Rescue, then, was improbable. The NC-3 must save herself. A crew

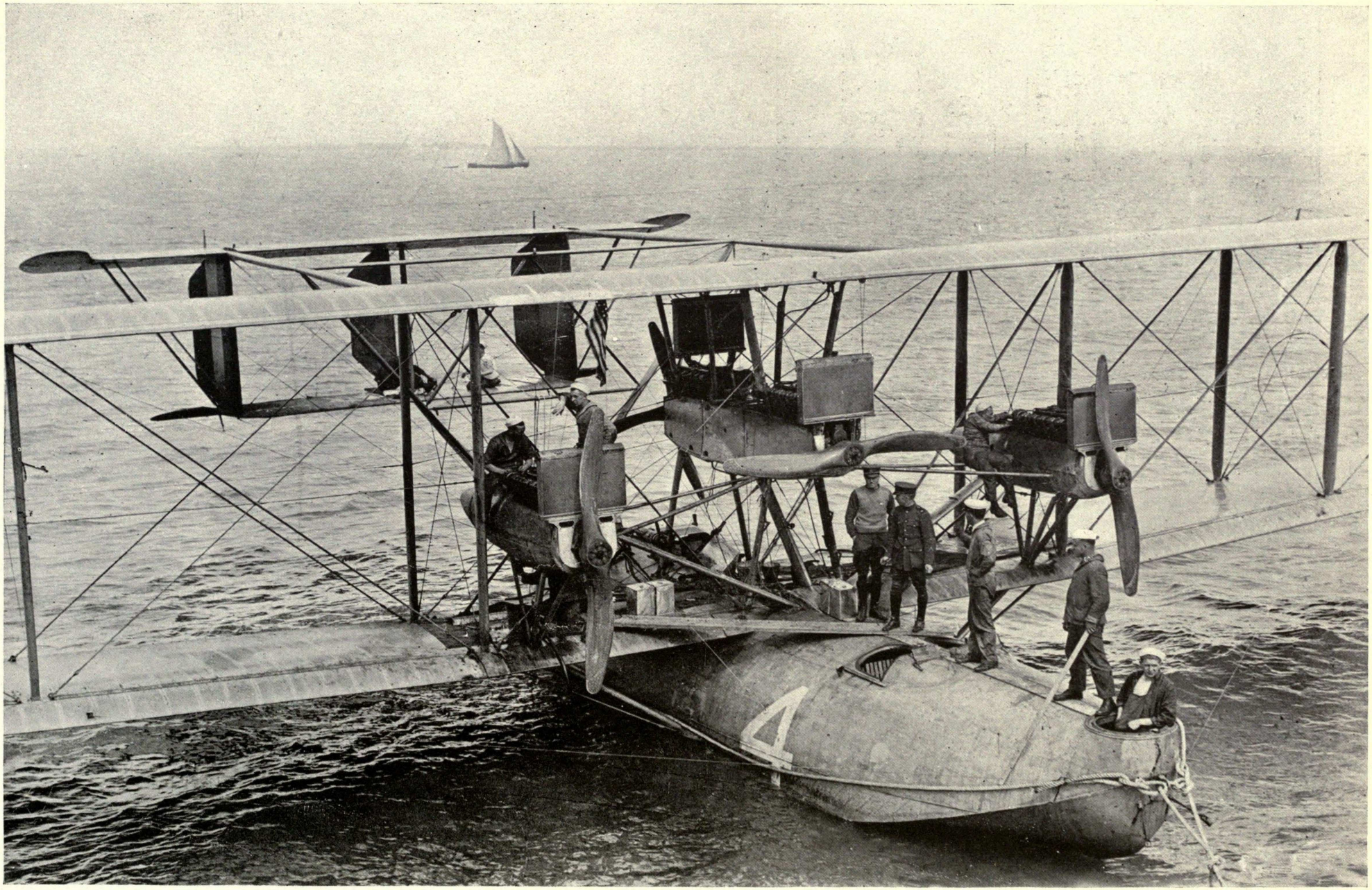


Fifth Leg, U. S. Navy Flying Boat NC-4 from Ponta Delgada to Lisbon, Portugal
(Time given is New York Standard)

with radiator water to drink and scant supplies of chocolate and salty sandwiches must bring a damaged hull for hundreds of miles over seas running often as high as thirty feet. Could they do it? Could the vessel, built primarily for aerial travel, make such an ocean voyage?

They were riding the swells with these

U. S. Sailors wig-wagging the glad news to ships at Lisbon, Portugal © International Film Service



In the Harbor of Lisbon

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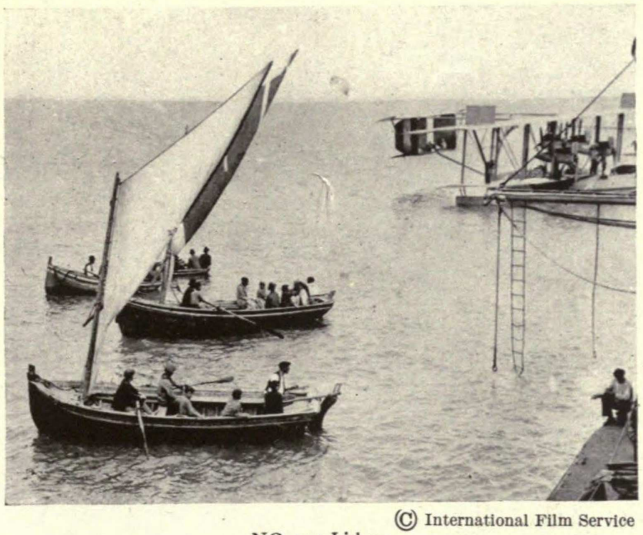


© International Film Service
NC-4 at Lisbon

thoughts when in middle morning, across a sea clear of fog, the form of a high mountain, its head hidden in clouds, showed ghostly in the distance. Pico! the 7,000 foot volcanic cone of the highest peak in the Azores undoubtedly lay before them. Observations, feverishly taken, checked with the testimony of their eyes. They were forty-five miles southeast of Fayal.

Should they make directly for the land they saw? The tanks held a two hours' supply of fuel; the idea was feverishly alluring. Sanity, however, whispered the futility of such a course. They could not safely ride against the waves and wind. Their only road lay eastward, through another night of tossing, toward Ponta Delgada. They must watch the tangibility of that great mountain die away as they planed off toward an island they could not see.

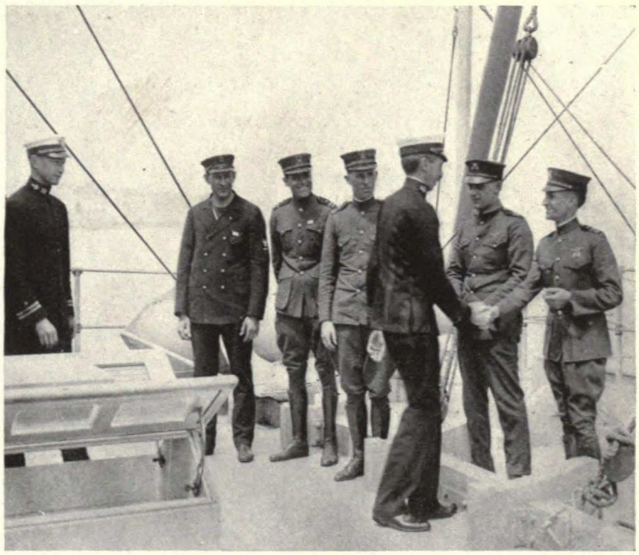
Who can describe those next twenty-five hours? Coasting backwards over the great waves, beaten by rain, sleepless and hungry and worn, the five endured more than even they can tell. They were blown southward for a time. They lost a second elevator. The right wing float threatened to come loose. Officers trained to use the most advanced navigating instruments trailed canvass buckets over the edge of the hull to assist in steering their craft.

Constantly, however, observations showed an increasingly favorable position. At length they calculated that they could make Ponta Delgada in two hours. Then land appeared,—farms, vineyards, roads, a lighthouse! Finally the *U. S. S. Harding* became visible, racing toward them. But they did not want help now.

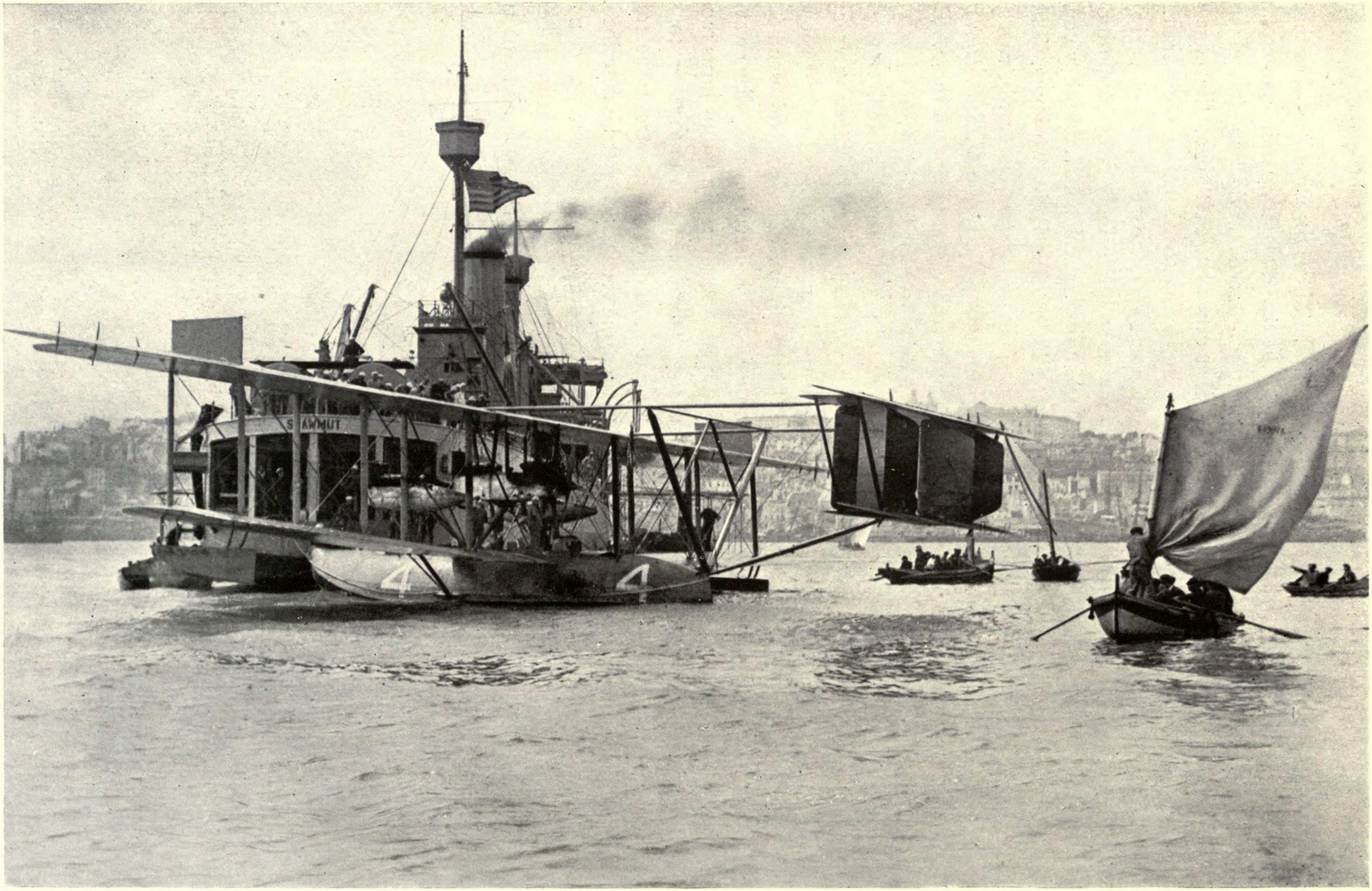
"Stand aside!" they signaled.

They taxied over the breakwater and into the harbor. Crowds lined its shores. Whistles, sirens, guns, and voices made a bedlam of the afternoon air. Flags waved gaily; photographers in motor boats raced about; "the scene was one never to be forgotten, and our relief from the long tension, our feelings cannot be described."

So ended a fifty-two hour, 205 mile journey over the open sea. It had been made in a flying boat by officers of the American Navy.



© International Film Service
Congratulating Lieut. Commander A. C. Read, U. S. N.
on his arrival at Lisbon



NC-4 Taking on Fuel from *Shawmut* in Lisbon Harbor

© International Film Service

V—Sail on and on!

THE gloriously battered NC-3, though making port, was unable to continue the voyage to Portugal. The NC-4, arriving from Horta at Ponta Delgada on May 20th, went on alone.

"Behind him lay the gray Azores—"

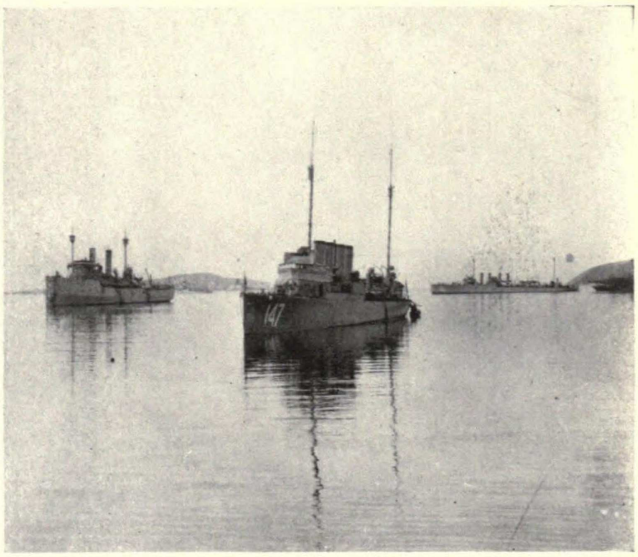
The discoverer of the Americas, passing to the south of the "Western Islands" in the early autumn of 1492, could scarcely have felt more sense of world responsibility than the commander of the flying boat which winged its way, seventy times faster than the *Maria*, in opposite direction at 10.18 Greenwich time May 27, 1919.

The weather was fair, with western winds blowing aside the mist from the wide, clean-looking streets of Ponta Delgada, and revealing rose and yellow churches, barracks and forts; with pleasant houses amid vineyards, cornfields and orchards of the hills beyond.

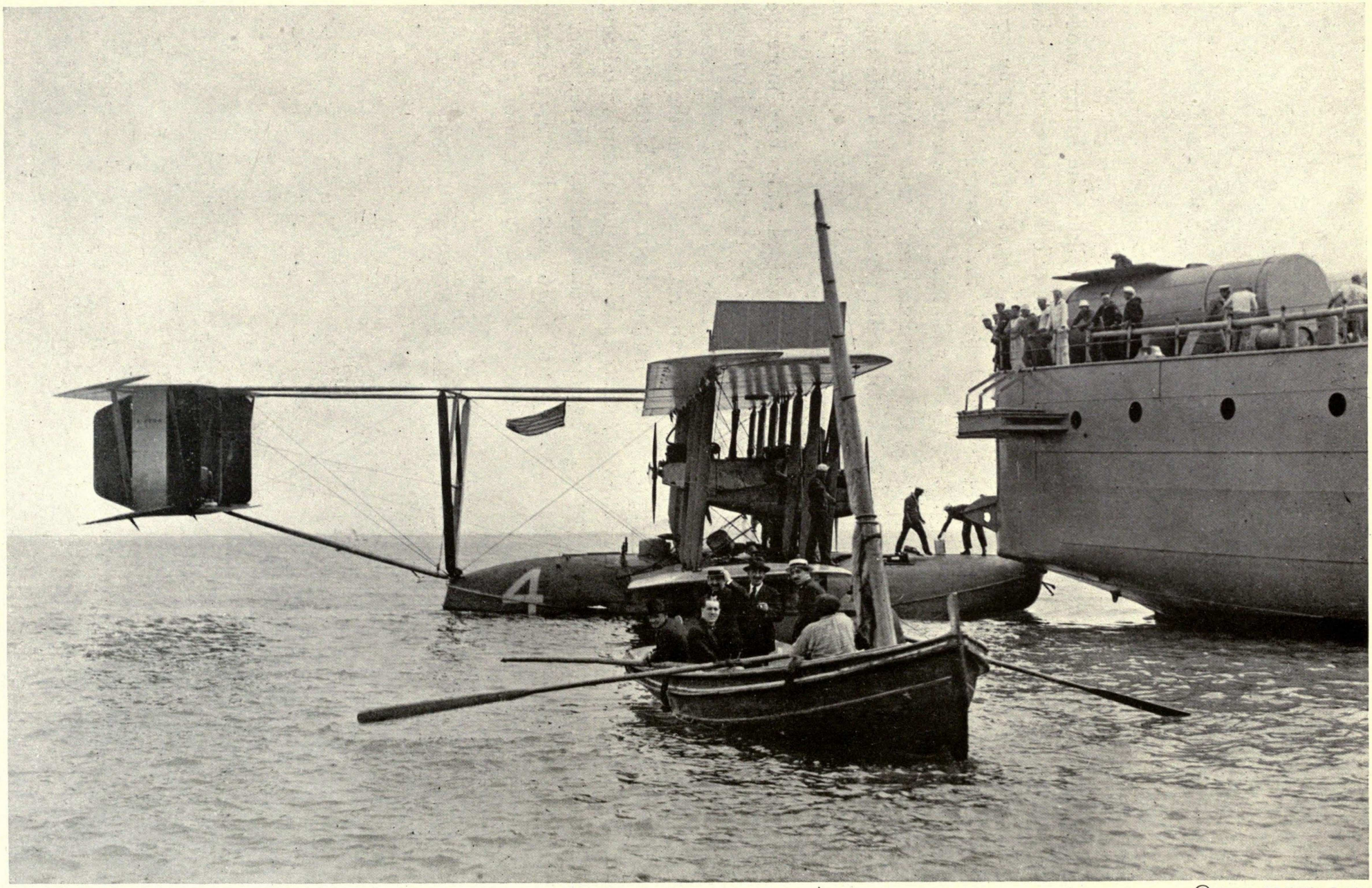
"A happy nation or a successful flight has no history," telegraphed Walter Duranty from Lisbon nine hours and forty minutes later.

And indeed, the NC-4 had a comparatively simple time of it. Two thousand pounds lighter than when she left Newfoundland, she succeeded in taking off from heavy swells at the harbor mouth. Though off her course sufficiently to lose Destroyer No. 3, she picked it up again and kept it the remainder of the way. Rain and mist were encountered, but did not interfere seriously with the 93 statute miles per hour which she made. The voyage was almost a triumphal parade.

There remained only one more accomplishment,—the flight to Plymouth. Here, on May 31st, a pilot of Massachusetts birth was to set foot on the shores of the harbor from which the Pilgrim fathers took ship for a new world three hundred years before. Here, after a flight of 3,936 nautical or 4,526 statute miles, made in a flying time of 52 hours and 31 minutes, Commander Read was to receive the congratulations of British



Photo, International Film Service
The "Peace" Markers



The NC-4 getting ready to leave Lisbon

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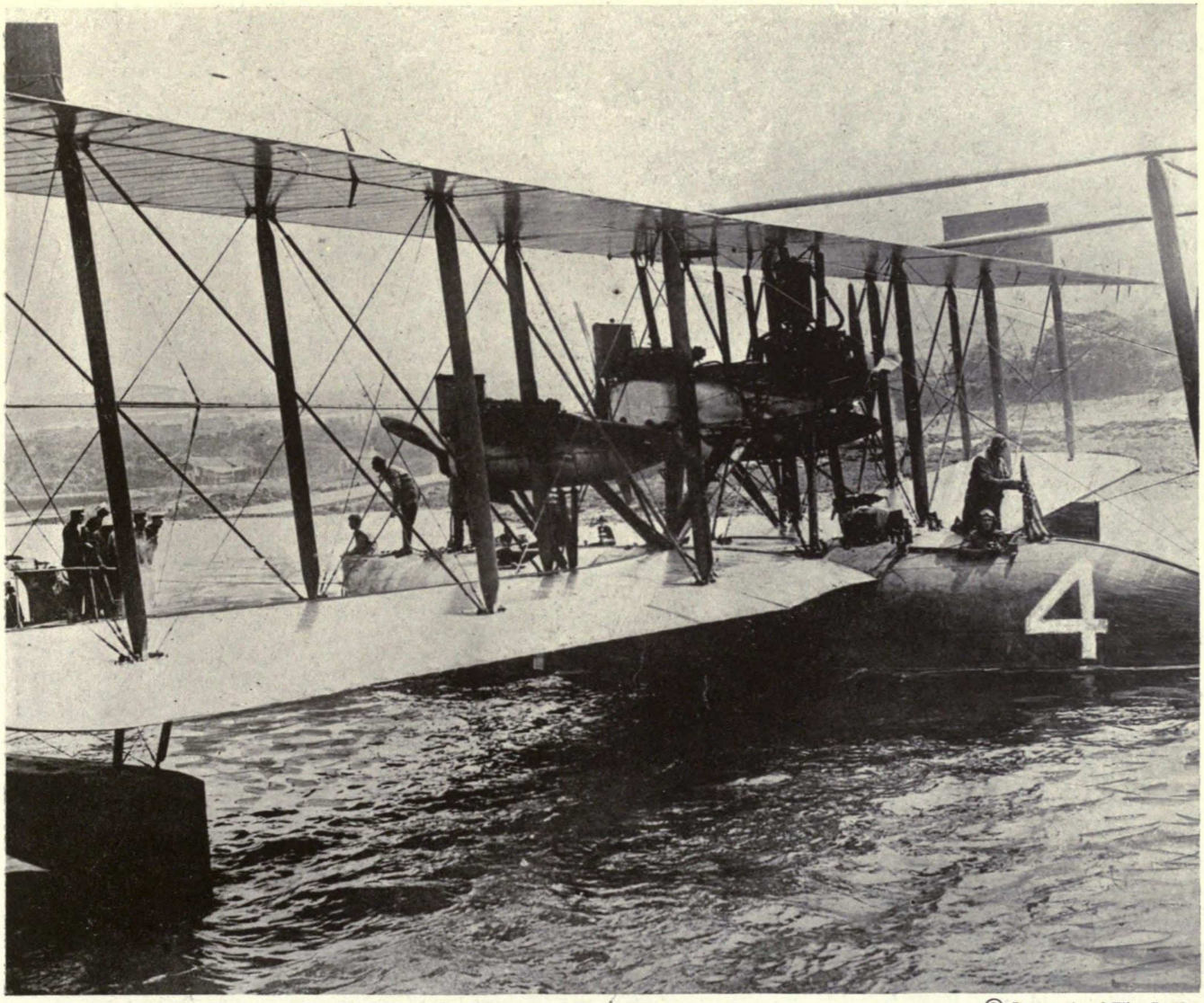

NC-4 on arrival at Plymouth

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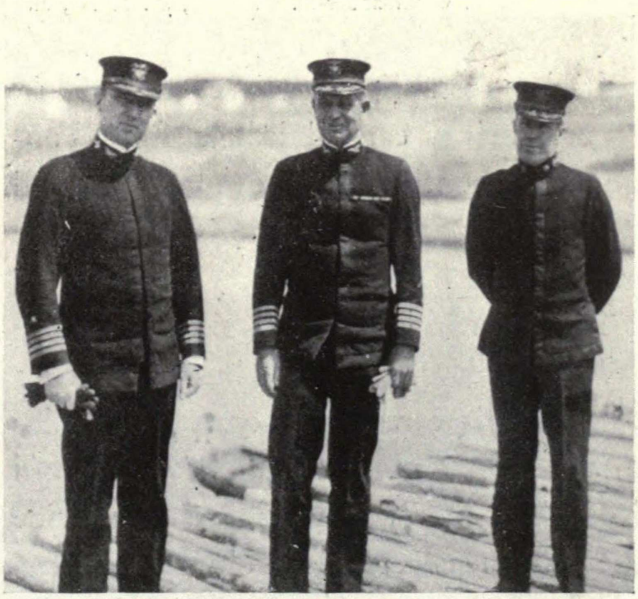
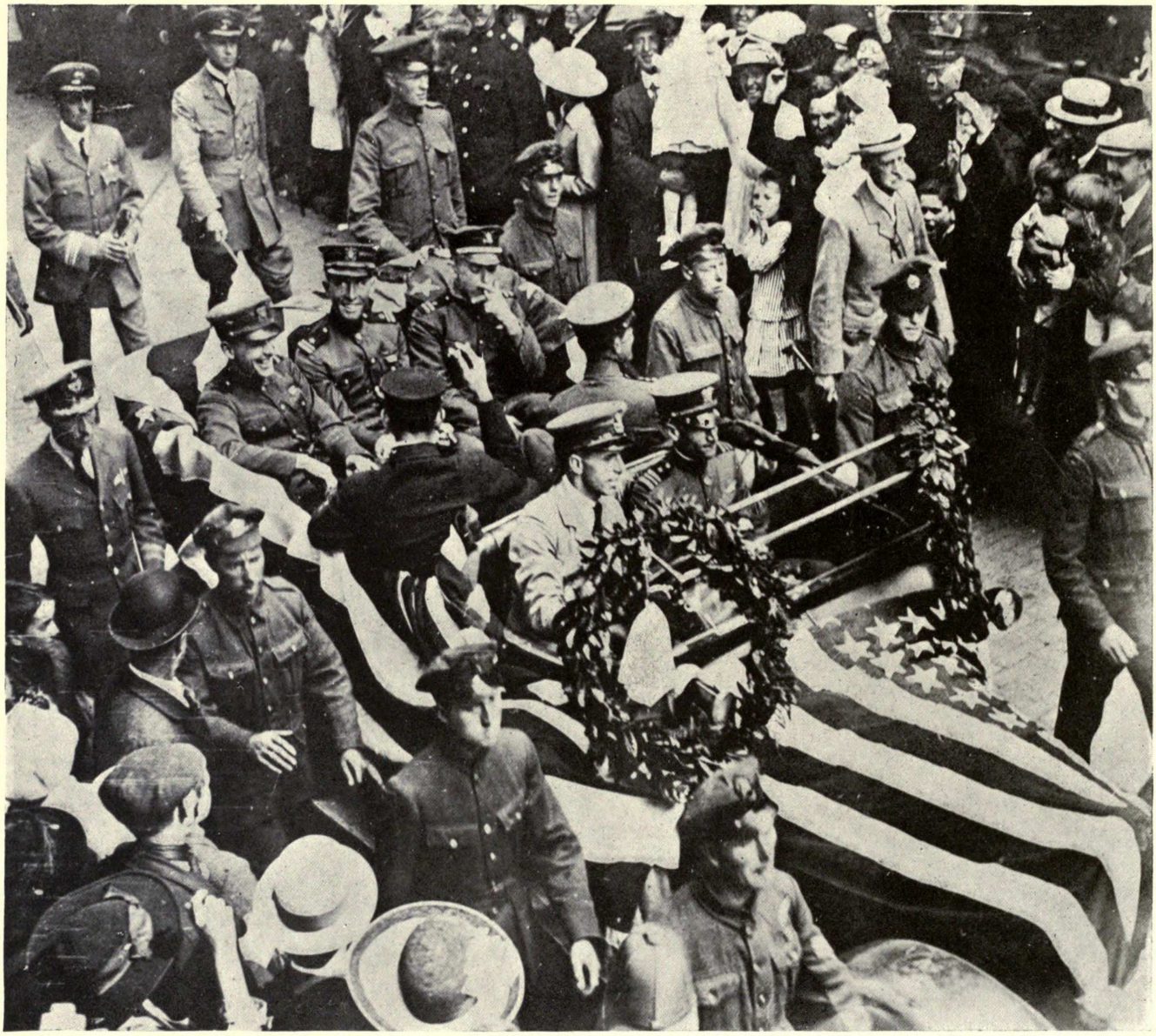
and American officials, to clasp hands with the daring Hawker, and to receive the R.A.F. Cross. He had thoroughly demonstrated the efficiency of the NC boats, the ability of American Naval officers, and the quality of Naval organization.

It is all over now; it is becoming history! What has it done for the world?

It has given the watching nations a spectacle of imperishable gallantry. The bravery of the attempt, the persistence under hardship, the indomitable courage in peril of those involved will long echo about the first trans-oceanic flight.



Captain Tombs of *Aroostook*
Flotilla Commander Captain Crenshaw
Captain Ghent of *Prairie*



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Lieut. Commander A. C. Read, U. S. N., and his crew being driven through the streets of Plymouth

It has established a record of six human beings carried by air from continent to continent, of seventeen carried from one continent to the islands of the other.

It has made havoc with time.

In the days of Columbus it took 71 days for his caravals to cross from Palos to the Bahamas. The NC-4 went from Rockaway to Plymouth, more than twice the distance covered by Columbus, in less than 71 hours. Ocean navigation by steam became an assured success by the voyage of the *Savannah* May 24, 1819, from Savannah, Georgia, to Liverpool, England. Both steam and sails were used in this vessel, and the distance was covered in 27 days. The fastest ocean passage by steamship between New York and Plymouth, 2962 miles, was that made by the *Kronprinzessin Cecilie* in five days, 7 hours and 25 minutes in September, 1909.

The fastest Atlantic ocean passages recorded by the Cunarder *Mauretania*—were made in four days, ten hours and

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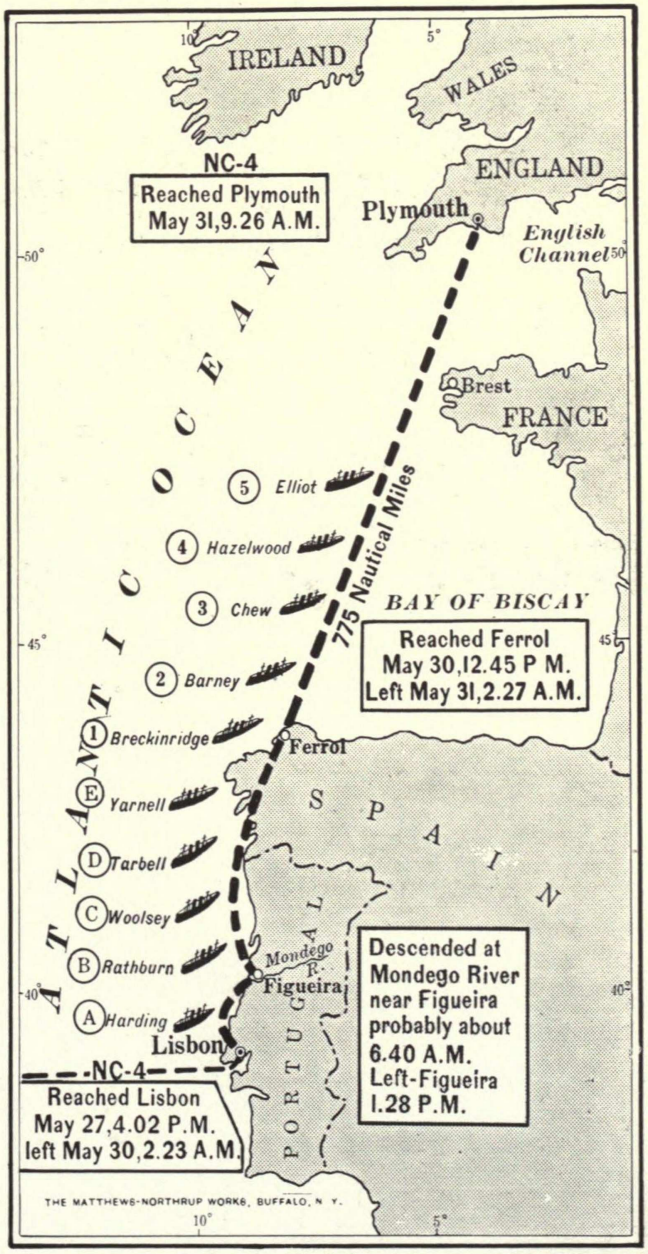
Lieut. Commander A. C. Read, U. S. N., carried on shoulders of admiring doughboys and sailors on arrival at Paddington Station, outside London, June 1, 1919

51 minutes, and in 4 days, 13 hours and 41 minutes in 1909. Ten years later the NC-4 crossed from New York State to England, by longer route, in 2 days, 7 hours and 33 minutes of actual flying time.

It has shown that the Atlantic, like other barriers to the growth of aviation, can be broken down, that, in a word, flight has no limit in the tasks it may choose and accomplish.

The greatest service rendered, however, was that of pioneering. The Navy-Curtiss boats charted a course through new regions. They proved that flight itself offered no problems. They indicated what the real problems were; ability to fix position by instruments, ability to fly through fog to an unseen goal, ability to alight on the ocean in case of need and to sail the ocean successfully when once upon it. These problems they not only indicated—they partly solved them. They gave the promise of a successful world-voyaging aircraft. Therein lies their triumph. It will increase in significance with years.



Sixth Leg, U. S. Navy Flying Boat NC-4 from Lisbon to Plymouth, England

(Time given is New York Standard)

Photo, International Film Service

A Glorified Mayflower Returns — The NC-4 Arrives at Plymouth

The Flight, by Lieut. Commander Albert C. Read, U.S.N.

THE seventeen men who flew from Trepassey May 16 had, I think, one feeling in common. They appreciated the quality of the NC boats and their equipment. A big task was to be done. These flying boats represented big preparations to meet it. To the flyer this sensation was gratifying. It was good to feel that in scale and effectiveness the expedition of which you were a part marked an advance over previous ones. It was good to realize that between you and the ocean was a hull with which you could land and navigate on almost any sea. It was comforting to know that communication with the world was assured by a radio apparatus of unusual excellence.

The roominess of the ships also made its subtly reassuring impression. In the navigator's cockpit of the NC-4 I could lean forward at my lookout or sink back for a smoke. I could climb out of my seat and down to the passages communicating with the pilots. I could, though I never chose to, stretch out and sleep. Unconsciously, one got from such roominess a sense of the size and strength of the boat and a feeling of confidence in it.

There were difficulties in connection with the Trans-Atlantic flight. There were also unusual compensations. The Trepassey-Plymouth voyage has been compared with the great voyage of 1492. Few realize how much harder the first trip from Europe to America by water was than the first trip from America to Europe by air. Columbus was proving to the world something which *he* believed. We were proving to the world something the world believed itself. Columbus was almost alone in his theories. We had the support of almost every living flyer, land or marine. Columbus had seventy days of difficulties—we had two. Columbus had a crew in mutiny at the idea of going forward—any member of any NC crew would have mutinied at the thought of turning back.

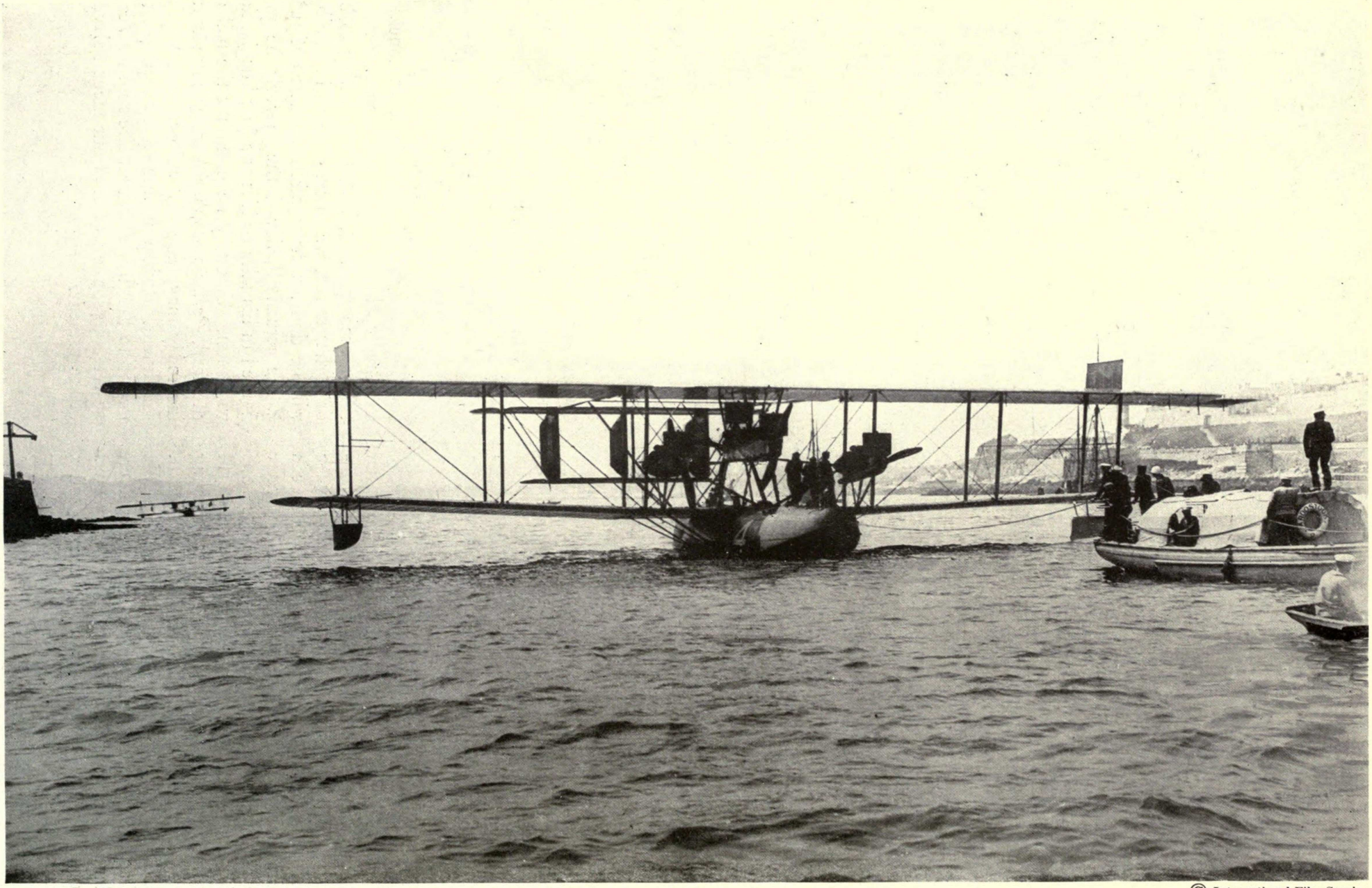
The Navy-Curtiss boats were efficient in flight. At first there was a natural doubt with respect to the motors. We hoped nothing would go wrong, but perhaps it might. As hour after hour passed, however, and the engines thundered on with never a miss or a faltering, we felt we had something behind us which would not fail. After several hours we could have run on three motors, and toward the end of the flight it would have been possible to go successfully on two.

The extension of this motor efficiency will be a point of departure for future work. Improvements such as the use of gears and the installation of separate oil systems for each engine will improve the motors we used for the Trans-Atlantic flight.

From such details we should go to the consideration of higher horsepower and its distribution with the larger craft which this will mean.

Will the advance be rapid? Will there be changes as important to the world as the discovery of a hemisphere? To-morrow must answer for itself. Those who have assisted in the first ocean flight have, I hope, furthered the cause of aeronautical education; shown the efficiency of naval flying; and aroused the public to further possibilities. As for the future, this is certain: any one who to-day declares anything impossible is apt to bark his knuckles. Personally, I have seen so many incredible things accomplished, that I am willing to believe that much, which now seems impossible, will be done. I have often wondered if Jules Verne actually believed the marvels he prefigured in his tales or if it was just imagination with him. Certainly he often hit the nail on the head. Perhaps prophecies which seem amusing today may, like his visions, find a quick fulfillment. Perhaps we are not even prophesying up to the future, and require another Verne or Wells to shake us out of our mental slavery of the present.

A C Read



NC-4 Being Towed to her Moorings at Plymouth

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Departures and Arrivals of the Navy-Curtiss Flying Boats, on the Trans-Atlantic Flight, May 8 to May 31, 1919

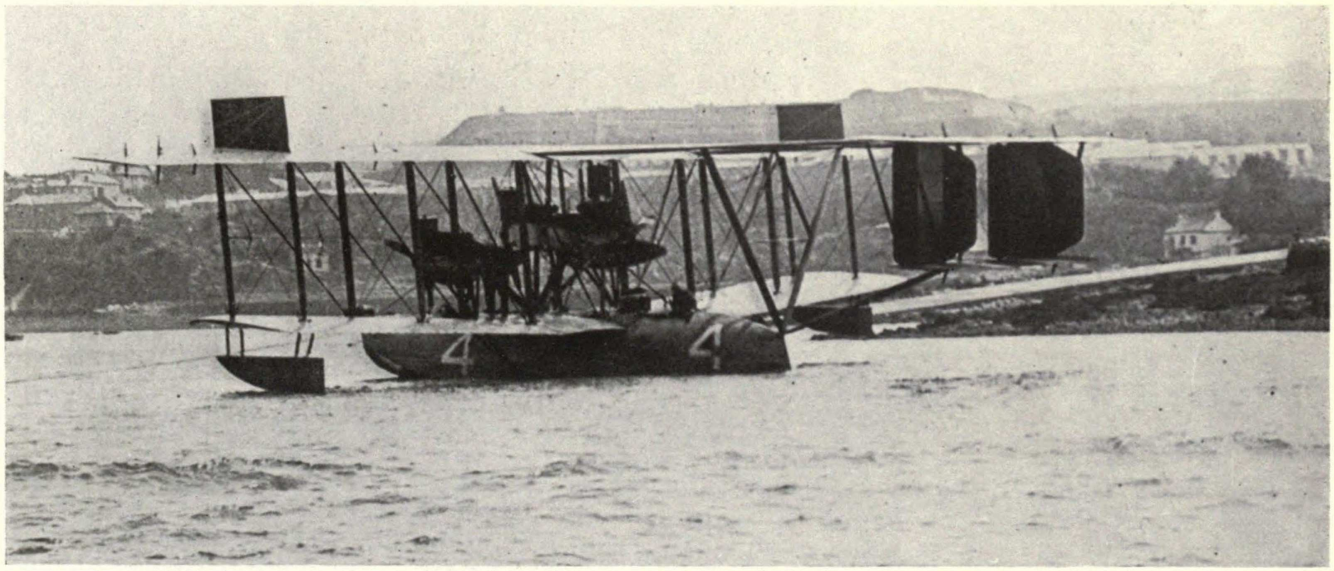
(New York time is used throughout)

Far Rockaway, New York, to Trepassey Bay, Newfoundland

	NC-1	NC-3	NC-4
MAY 8, 1919			
Took off, Far Rockaway	10.04 A. M.	10.02 A. M.	10.03 A. M.
Passed Chatham Light	1.47 P. M.	1.47 P. M.	1.47 P. M.
MAY, 9, 1919			
Passed No. 1	.....	.....	.....
Passed No. 2	3.10 P. M.	3.10 P. M.	.....
Passed Cape Sable	5.10 P. M.	5.10 P. M.	.....
Arrived, Halifax	7.10 P. M.	7.00 P. M.	.....
MAY 10, 1919			
Took off, Halifax	7.47 A. M.	11.40 A. M.	.....
Arrived Trepassey	2.45 P. M.	6.30 P. M.	.....
MAY 14, 1919			
Took off, Chatham	.....	.....	9.05 A. M.
Arrived, Halifax	.....	.....	1.15 P. M.
MAY 15, 1919			
Took off, Halifax	.....	.....	9.52 A. M.
Arrived, Trepassey	.....	.....	5.37 P. M.

Distance: 1,000 nautical miles.

Flying Time: 14 hours, 13 minutes (NC-4).



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From a stern and rockbound coast—Lieut. Commander A. C. Read's ship rests in Plymouth Harbor

The Mayor of Plymouth Greeting the Crew of the NC-4 on Their Arrival at Plymouth

© Photo, International Film Service

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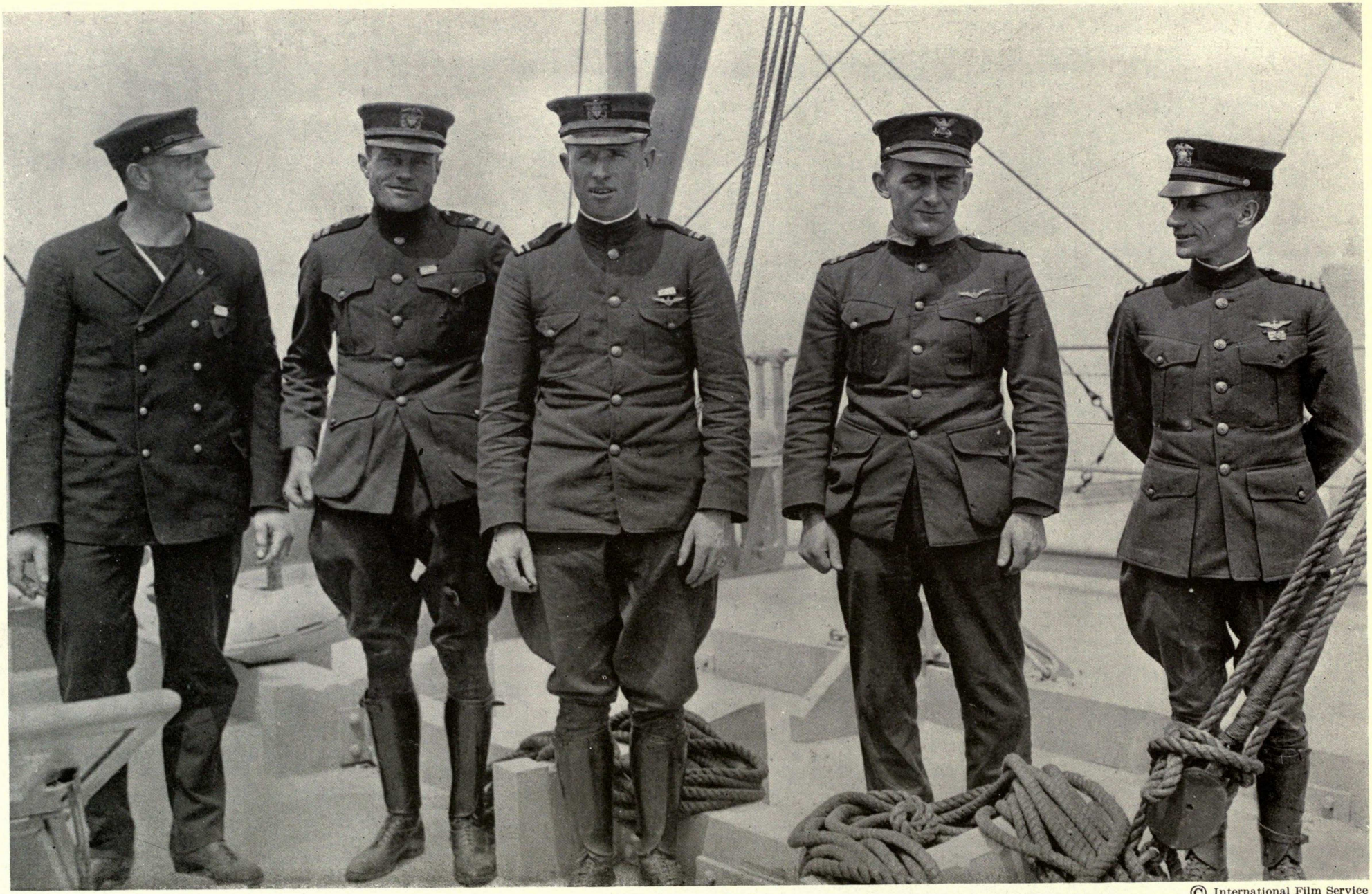
MAYOR OF PLYMOUTH CONGRATULATING LIEUT. COMMANDER A. C. READ, U. S. N., AND HIS MEN
Left to right—Rear Admiral Sir A. J. Henniker-Hugan, Admiral Plunkett, U. S. N., and the Mayor speaking

TREPASSEY BAY, NEWFOUNDLAND, TO HORTA, FAYAL ISLAND, THE AZORES

MAY 16–17, 1919

	NC-1	NC-3	NC-4
Took off, Trepassey	6.09 P. M.	6.06 P. M.	6.07 P. M.
Out of sight	6.20 P. M.	6.20 P. M.	6.20 P. M.
Passed No. 1	.....	.....	.....
Passed No. 2	7.35 P. M.	7.35 P. M.	7.35 P. M.
Passed No. 3	8.03 P. M.	.....	.....
Passed No. 4	.....	.....	.....
Passed No. 5	.....	.....	....
Passed No. 6	10.05 P. M.	10.05 P. M.	10.05 P. M.
Passed No. 7	.....	10.58 P. M.	.....
Passed No. 8	.....	.....	11.29 P. M.
Passed No. 9	.....	12.10 A. M.	.....
Passed No. 10	.....	.....	.....
Passed No. 11	.....	.....	1.50 A. M.
Passed No. 12	.....	.....	.....
Passed No. 13	3.13 A. M.	2.23 A. M.	.....
Passed No. 14	.....	.....	3.06 A. M.



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CREW OF THE NC-4

From left to right — Chief Special Mechanic E. C. Rhodes, U. S. N.; Lieut. J. L. Breese, U. S. N. R. F.; Lieut. (j. g.) W. Hinton, U. S. N.
Lieut. E. F. Stone, U. S. C. G.; Lieut. Commander A. C. Read, U. S. N.

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Commander J. H. Towers, U. S. N., of NC-3; Lieut. Commander A. C. Read, U. S. N., of NC-4 and Lieut. Commander P. N. L. Bellinger, U. S. N., of NC-1, preceded by Rear Admiral Plunkett, leaving American Peace Headquarters at Hotel Crillon in Paris after visit to Admiral Benson

TREPASSEY BAY, NEWFOUNDLAND, TO HORTA, FAYAL ISLAND, THE AZORES—CONTINUED

	NC-1	NC-3	NC-4
Passed No. 15	.....	.....	.....
Passed No. 16	5.17 A. M.	.....	4.30 A. M.
Passed No. 17	.....	5.15 A. M.	.....
Passed No. 18	6.14 A. M.	.....	5.45 A. M.
Passed No. 19	.....	.....	6.14 A. M.
Passed No. 20	8.10 A. M.	.....	.....
Sighted land	.....	.....	7.35 A. M.
Passed No. 21	.....	.....	.....
Passed No. 22	.....	.....	8.10 A. M.
Arrived Horta	.....	.....	9.25 A. M.

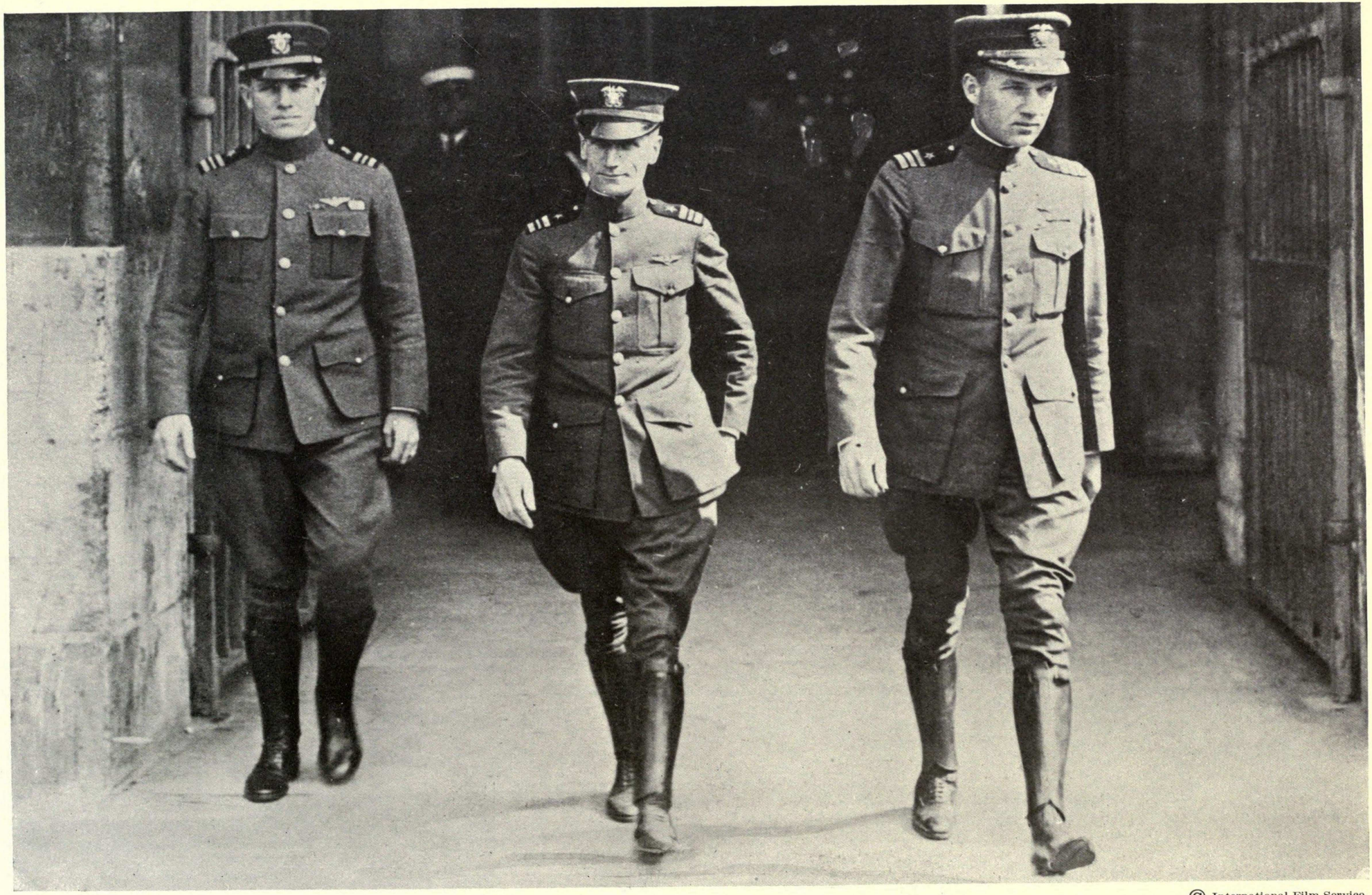
Distance: 1,200 nautical miles.
Flying Time: 15 hours, 18 minutes.

HORTA, FAYAL ISLAND, THE AZORES, TO PONTA DELGADA, SAN MIGUEL ISLAND, THE AZORES

MAY 20, 1919

	NC-4
Took off, Horta	8.40 A. M.
Arrived, Ponta Delgada	10.24 A. M.

Distance: 150 nautical miles.
Flying Time: 1 hour, 44 minutes.



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Lieut. Commander P. N. L. Bellinger, U. S. N.; Lieut. Commander A. C. Read, U. S. N., and Commander J. H. Towers, U. S. N., leaving Hotel Crillon, American Peace Headquarters in Paris, after a call on Admiral Benson

Ponta Delgada, San Miguel Island, the Azores to Lisbon, Portugal

MAY 27, 1919

	NC-4
Took off, Ponta Delgada, Azores	6.18 A. M.
Passed No. 1	7.13 A. M.
Passed No. 2	7.38 A. M.
Passed No. 3	.....
Passed No. 4	8.54 A. M.
Passed No. 5	9.35 A. M.
Passed No. 6	10.05 A. M.
Passed No. 7	10.40 A. M.
Passed No. 8	11.16 A. M.
Passed No. 9	12.18 P. M.
Passed No. 10	.....
Passed No. 11	1.10 P. M.
Passed No. 12	2.05 P. M.
Passed No. 13	2.38 P. M.
Passed No. 14	3.16 P. M.
Arrived Lisbon	4.01 P. M.

Distance: 800 nautical miles.
Flying time: 9 hours, 43 minutes.

Lisbon, Portugal, to Plymouth, England

MAY 30, 1919

	NC-4
Took off, Lisbon	1.24 A. M.
Passed Station Ship A	4.10 A. M.
Arrived, Figueira	7.21 A. M.
Took off, Figueira	9.28 A. M.
Arrived, Ferrol	12.45 P. M.

MAY 31, 1919

Took off, Ferrol	2.27 A. M.
Passed Station Ship No. 2	3.43 A. M.
Passed Station Ship No. 4	5.06 A. M.
Passed Station Ship No. 5	6.05 A. M.
Arrived, Plymouth	9.26 A. M.

Distance: 775 nautical miles.
Flying Time: 11 hours, 26 minutes.

Record Made by NC-4 from Rockaway to Plymouth

The record of the NC-4 from Rockaway to Plymouth follows:

Date	Course	Start	Arrived	Air line in nautical miles	Time in the air Hours,	Min.	Knots per hour
May 8	Rockaway to Chatham Light	10.04 A. M.	1.47 P. M.	190	3	43	51
May 14	Chatham to Halifax	9.05 A. M.	1.15 P. M.	340	4	10	85
May 15	Halifax to Trepassey	9.52 A. M.	5.37 P. M.	461	6	20	58
May 16-17	Trepassey to Horta	6.07 P. M.	9.25 A. M.	1200	15	18	81.7
May 20	Horta to Ponta Delgada	8.40 A. M.	10.24 A. M.	150	1	44	88
May 27	Ponta Delgada to Lisbon	6.18 A. M.	4.01 P. M.	800	9	43	81.3
May 30	Lisbon to Mondego River	1.24 A. M.	2.44 A. M.	100	1	20	75
May 30	Mondego River to Ferrol	9.38 A. M.	12.45 P. M.	220	3	7	66
May 31	Ferrol to Plymouth	2.27 A. M.	9.26 A. M.	475	6	59	72

Total air line distance 3,936 nautical miles.
Time in the air from Rockaway to Plymouth 52 hours and 31 minutes.

HOME VICTORIOUS

Photo, International Film Service

Lieut. Commander Albert Cushing Read, U. S. N., Captain of the Trans-Atlantic Seaplane, the NC-4, arriving at Hoboken from France on the transport *Zeppelin*

The Log of the Transatlantic Flight

HEREWITH is presented the log of the Trans-Atlantic Flight of the squadron of NC planes during the course of which three of the planes reached the Azores, while one of them went the full journey to Plymouth. The Navy Department instructed the sea-plane commanders to use Greenwich mean civil time for the purposes of the flight in the following order:

"Greenwich mean civil time shall be used for communication purposes. Greenwich mean civil time is the civil time of the meridian to Greenwich, the day commencing at midnight and the hours numbered from one to 23. All radio operators shall keep their watches and clocks set at Greenwich mean civil time."

The normal difference in time between New York and Greenwich is five hours, which is equivalent to saying that when it is noon in New York it is five o'clock in the afternoon at London. Due to the daylight saving system in effect in this country now, however, the difference is reduced by one hour.

Here is a comparative table reducing Greenwich mean time to Washington Summer Time which is the same as New York Summer Time:

G. M. Time	Washington and New York Time
0	8.00 P. M.
1	9.00 P. M.
2	10.00 P. M.
3	11.00 P. M.
4	12 Midnight
5	1.00 A. M.
6	2.00 A. M.
7	3.00 A. M.
8	4.00 A. M.
9	5.00 A. M.
10	6.00 A. M.
11	7.00 A. M.
12	8.00 A. M.
13	9.00 A. M.
14	10.00 A. M.
15	11.00 A. M.
16	12 Noon
17	1.00 P. M.
18	2.00 P. M.
19	3.00 P. M.
20	5.00 P. M.
21	5.00 P. M.
22	6.00 P. M.
23	7.00 P. M.

* * *

MAY, 8, 1919

At 10.00 A. M. Commander J. H. Towers, U. S. N., sent word that the planes had left Rockaway. Within two minutes this information had been received on the station ships between Cape Cod and Halifax. Within five minutes it had been received on the U. S. S. "Baltimore" at Halifax. Before the planes had gone thirty-four miles this information regarding the time of start, and instructions for ships at sea to restrict the use of their radio apparatus, had been received by the battleships of the U. S. fleet, by the destroyers in Newfoundland and by Admiral Knapp in London and Admiral Benson in Paris.

Photo, International Film Service

Heroes of Ocean Flight coming in on *S. S. Zeppelin*—the transport *Zeppelin* coming up the bay escorted by smaller craft and flying boats and planes

At the same time Commander J. H. Towers, U. S. N., sent a message to the "U. S. S. Baltimore" at Halifax directing her to report the conditions of the weather at Halifax at noon. At 1.13 P. M., Commander J. H. Towers, U. S. N., received a message which had been relayed from the "Baltimore" stating the weather at Halifax at noon. This message was as follows:

"Weather cloudy, pressure 29, service wind WNW thirty-seven miles, temperature 64, sea moderate, visibility good, base of low clouds 2,000 forming from Northwest noon May 8th."

At noon the Assistant Secretary of the Navy, Mr. Roosevelt, filed the following message at the department Communication Office:

"Commander J. H. Towers, U. S. N., USS NC-3. Delighted with successful start; good luck all the way."—(Signed) ROOSEVELT.

This message was delivered to Commander J. H. Towers, U. S. N., when his seaplane was off Chatham Light.

At 1.30 P. M. the Navy Department received information that the planes had been sighted at the Chatham Air Station.

At 2.00 P. M. the message received at the Navy Department direct from Commander J. H. Towers, U. S. N., that the NC Seaplane Division had passed Chatham Light at 1.47. Commander J. H. Towers, U. S. N., sent this message at 1.50 P. M.

At 2.12 P. M. the Navy Department received a resume of the conversation between the NC-3 and NC-4 which indicated that the NC-4 was having oil trouble and was running on three motors and might have to land.

At 2.30 P. M. the Navy Department received information that the NC-3 was still having motor trouble, but had passed over Station Ship No. 1.

At 2.45 P. M. the Navy Department received intercepted conversation from the NC-1 to the NC-4 which indicated that the NC-4 was still in the air.

At 2.54 P. M. the Navy Department received more intercepted conversation between the planes regarding radio compass directions.

At 3.20 P. M. the Navy Department received information that two seaplanes had passed three miles from Station Ship No. 2, at 3.10 P. M.

At 3.22 P. M. the Navy Department received more intercepted conversation between the NC-1 and NC-3, in which the NC-1 told the NC-3 that they bore 340° from Station Ship No. 2, and which indicated that the NC-3 was checking up her navigation.

At 3.25 P. M. the Navy Department received information that NC-1 was asking NC-4 whether she was O. K. and also that the NC-3 was asking Station Ship No. 2 for radio compass signals.

At 3.26 P. M. the Navy Department received information that the NC-3 was again asking for radio compass signals in order that she might check up her navigation.

At 3.41 P. M. the Navy Department received information that the NC-3 was asking Station Ship No. 3 for radio compass signals in order that the NC-3 might steer a proper course for the Station Ship. The NC-3 also asked NC-1 where the NC-4 was and the NC-1 replied that the NC-4 had her oil pump fixed all right.

Another part of the communication was the forwarding of a message from Admiral Knapp which read as follows:

"British Air Ministry have made arrangements to extend every facility and convenience to NC flying boats upon arrival at Plymouth after Trans-Atlantic flight. In case of emergency landing near English Coast, Air Station at Tresco in Scilly Islands may be utilized as temporary repair or refueling point."—(Signed KNAPP.

This message was placed on cable in London in the night of May 7th and was delivered to Commander Towers on the NC-3 while he was off Chatham Light.

At 4.12 P. M. the Navy Department received information from the NC-1 and NC-3 that they were very busy checking up their navigation from the "U. S. S. Delphy" which was Station Ship No. 3. The "Delphy" sent radio signals continuously in order that the planes might plot their position with their radio compass and steer a straight course for Cape Sable.

At 4.35 P. M. the NC-3 called the NC-1 and NC-4 and asked the NC-1 if she was directly astern of the NC-3. The NC-4 did not answer. The Navy Department received this information at 4.40 P. M. and could have sent it direct by radio to Admiral Knapp in London and Admiral Benson in Paris so that they would have received it ten minutes after Commander J. H. Towers, U. S. N., sent his message to the NC-1.

At 5.11 P. M. the Navy Department received information from Cape Sable that the NC-1 and NC-3 had passed over the radio station at that place at 5.10 P. M.

At 5. 13 P. M. the Naval radio station at Bar Harbor sent the 5.00 P. M. weather report which had been received from the "U. S. S. Baltimore" at Halifax. The planes received this easily and thus knew at 5.13 P. M. what the weather conditions at Halifax were at that time.

At 5.35 P. M. the Navy Department received information that the planes had not yet sighted the "U. S. S. Ludlow."

At 6.34 the Navy Department received information that at 6.25 the "U. S. S. Delphy" asked the "U.S. S. McDermut" for data regarding the position of the NC-4. The "McDermut" replied: "When the NC-4 passed at 2.30 she was six miles to the left of NC-1 and NC-3. No report from her regarding passing other stations. Am now searching for NC-4."

At 6.37 the Navy Department received information that the NC-1 was in direct radio communication at 6.10 with the "U. S. S. Baltimore" at Halifax.

At 6.47 P. M. the Navy Department was informed that the "U. S. S. Delphy" sent following to the "McDermut" at 6.31 P. M.: "Shall we assist in searching?" The "Kimberly" sent "Two seaplanes passed three miles to southward at 3.10 P. M." The "McDermut" sent the following message immediately to the "Kimberly": "Search on course 239 degrees true from 7.00 to 8.00 P. M.; speed 25 knots."

At 7.50 P. M. the "U. S. S. Baltimore" sent the following message to the Chief of Naval Operations which was received by him at 8.00 P. M.: "NC-1 and NC-3 arrived Halifax 7.00 P. M."

MAY 12, 1919

Commander J. H. Towers, U. S. N., on this date sent to the Navy Department the following summary of flights, May 8th to 10th:

"Left Rockaway in NC-3 accompanied by NC-4 and NC-1 at 10.00 A. M., May 8th, proceeding in formation along south coast of Long Island; thence over Vineyard, south to Chatham; thence to Seal Island. Received radio from NC-4 at 2.10 P. M. that they were running on three engines and might be compelled to land. NC-4 dropped astern and shortly after was lost sight of. It was believed that she had turned to land near the 'McDermut' which was barely visible off our port quarter.

"From Seal Island proceeded in company with NC-1 to Nova Scotia and up the coast to Halifax, NC-3 landing at 7.00 P. M. and NC-1 at 7.10 P. M. Started refueling from the 'Baltimore' immediately and completed at 2.00 A. M., May 9th. Made arrangements to leave for Trepassey at 8.00 A. M., May 9th, but discovered cracked type on pusher propeller of NC-3 and three propellers of NC-1 were in similar condition. Obtained four hubs from Canadian air station and replaced damaged propellers with spares from 'Baltimore.' On attempting start on the morning of May 10th, the starter on pusher engine of NC-3 broke. Signalled NC-1 to proceed to Trepassey. Replaced starter and left Halifax at 8.15 A. M.

"Landed 38 miles northeast of Halifax and examination showed starboard tractor propeller type 5381, had cracked tip. Returned to Halifax, arriving at 10.30 A. M. Removed propeller from center tractor engine and put it on starboard tractor. Left Halifax at 11.40 A. M. and proceeded to Trepassey, landing at 6.30 P. M. The total time from Halifax to Trepassey was NC-3 six hours and fifty minutes; NC-1 six hours and fifty-six minutes.

"Each seaplane spent approximately 40 minutes maneuvering for landing at Trepassey under very adverse weather conditions. Winds as high as 45 miles an hour were encountered, although fairly smooth air was found at 3,500 feet. Engines functioned well on both legs. Radio telegraph maintained excellent communication. Navigation was rendered difficult by the high velocity and varying directions of winds and necessity of flying high to avoid rough air, but means are regarded as satisfactory.

"Are engaged in overhauling and refueling NC-3 and NC-1 and will start for Azores when conditions are favorable."

MAY 14, 1919

The Navy Department received a dispatch at 4.30 this afternoon from the "U. S. S. Baltimore" at Halifax stating that the NC-4, which resumed its flight from Chatham this morning at 9.05 for Trepassey Bay would not leave Halifax for Trepassey until daybreak to-morrow morning.

The NC-4, which left Rockaway with the NC-1 and NC-3 on Thursday morning, May 8th, was forced by engine trouble to make a landing off Chatham Light, and after spending the night on the water there was towed in the next morning to the Naval Air Station at Chatham. The run from Chatham this morning to Halifax was made in approximately 4 hours, a distance of 342 miles, an average of practically 85 miles an hour.

Shortly after noon a message was received from the plane stating that Lieutenant Commander A. C. Read, U. S. N., expected to land at Halifax making a stop only of a few minutes before proceeding to Trepassey. A later report stated that he would not leave Halifax until daybreak tomorrow.

Reports from Trepassey received at the Department to-day stated that weather conditions along the route from Trepassey to the Azores were continuing to improve, with indications that they would be even better to-morrow, and that the NC-1 and NC-3 probably would not attempt a start before to-morrow on the long leg to the Azores as at that time the NC-4 was expected to reach there by sunset.

The message from Trepassey received at 3.47 P. M. was as follows:

"Off shore storm from Cape Cod eastward has passed north, leaving light variable winds from Trepassey to Azores and the sea has subsided. Conditions therefore fair for a start this evening for the long leg of the flight, but the arrival of NC-4 probably will delay it until to-morrow when weather will be even more favorable between here and Azores.

"Conditions from Chatham to Trepassey very good; expect NC-4 to arrive about sun-

Photo, International Film Service

Crews of NC planes home again—the commanders and crews of the NC planes on the bridge of the transport *Zeppelin*

down to-day. Seaplane crews in fine condition for start to-day."

Early this afternoon the Department received a message from the "U. S. S. Baltimore" at Halifax, stating that the C-5 passed over Halifax at 4.45 P. M. and that the NC-4 arrived there at 1.10 P. M. It stated Lieutenant Commander A. C. Read, U. S. N., expected to leave for Trepassey at daybreak to-morrow morning.

The following is the log kept by the radio office at the Navy Department:

At 9.21 A. M. the Department received the following: "NC-4 commenced flight at 9.05 A. M. local summer time."

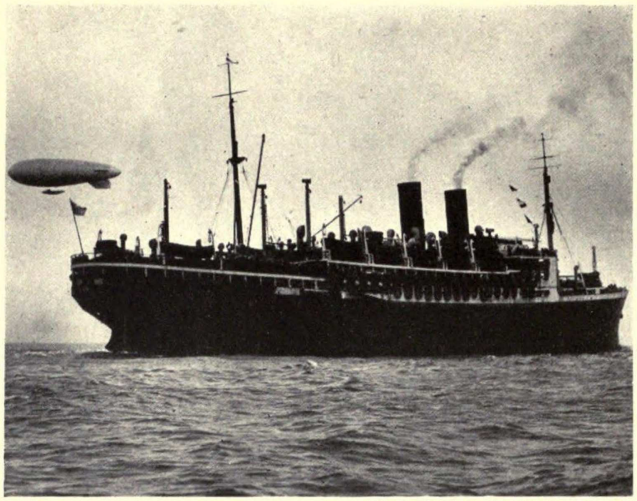
At 9.30 A. M. the following was received: NC-4 at 9.25 A. M. stands off on course for Halifax convoyed by HS-2—1850—1916.

A little later word was received that the HS-2 1850—1916 returned Chatham at 10.41 A. M. because unable to keep up with the NC-4.

At 11.10 A. M. the NC-4 reported that they could hear the radio station at Norfolk wire 4 motors were running.

At 11.17 the following message from Mr. Roosevelt to Lieutenant Commander A. C. Read, U S. N. was dictated:

"What is your position? All keenly interested



Photo, International Film Service

The U. S. transport *Zeppelin* coming up the bay with her escort of craft, seaplanes and airplanes

in your progress. Good luck.—(Signed) ROOSEVELT."

This was then sent immediately to the naval radio station at Bar Harbor from where it was retransmitted by radio to the Navy Seaplane NC-4.

At 11.20 A. M. the following reply was received at the Navy Department from Lieutenant Commander A. C. Read, U. S. N.:

"Roosevelt, Washington—Thank you for good wishes. NC-4 is 20 miles southwest of Seal Island making 85 miles per hour.—(Signed) READ."

The Navy Department immediately transmitted the following to Paris, London, San Francisco and Panama Canal and to ships at sea:

Following received 1520 GMT direct from seaplane NC-4 to Roosevelt:

"Thank you for good wishes. NC-4 is 20 miles southwest of Seal Island making 85 miles per hour."

Lieutenant Commander A. C. Read's reply was received in France, England and California at 11.21 A. M. Many ships at sea had received this at 11.26 A. M.

At 12.39 P. M. information was intercepted from the plane that Commander Read expected to stop at Halifax and then start for Trepassey, Newfoundland again. At 12.36 P. M. a message was intercepted from the plane stating that the NC-4 would land in Halifax for a few minutes.

At 12.30 the following conversation was intercepted between Barrington Passage Radio Station and the NC-4:

"You look good. Took a snap. Would you like print?"

The NC-4 replied: "Glad to have some."

At 1.27 P. M. the Department received information that the NC-4 had arrived at Halifax at 1.15 P. M.

At 4.30 P. M. the Department received a message that the NC-4 intended to leave Halifax at daylight Thursday.

Following is the Log of Messages received at Navy Department during flight from Trepassey, N. F., to the Azores with the despatches arranged in chronological order according to time of receipt:

MAY 16, 1919

6.03 P. M. from "U. S. S. Aroostook": "Seaplane NC-3 began taxying for Azores flight. 2036 GMT (4.36 P. M. Wash. time)."

6.23 P. M. from "U. S. S. Aroostook": "Seaplane NC-4 began taxying for Azores flight. 2113 GMT (5.13 P. M. Wash. time)."

7.10 P. M. from "U. S. S. Aroostook": "Seaplane NC-1 began taxying for Azores leg. 2053 GMT (4.53 Wash. time)."

7.17 P. M. from "U. S. S. Aroostook": "Seaplane NC-4 took off water on Azores flight. 2136 GMT (5.36 P. M. Wash. time)."

7.27 P. M. from "U. S. S. Aroostook": "Seaplane NC-4 landed in Trepassey Harbor. 2153 GMT (5.53 P. M. Wash. time—after circling harbor)."

7.52 P. M. from "U. S. S. Aroostook": "Seaplane NC-4 took off water on Azores flight. 2207 GMT (6.07 P. M. Wash. time)."

7.54 P. M. from "U. S. S. Aroostook": "Seaplane NC-3 left water for Azores leg. 2206 GMT (6.06 P. M. Wash. time)." Note—see 8.32 P. M.

7.55 P. M. from "U. S. S. Aroostook": "Seaplane NC-1 took off water on Azores flight. 2209 GMT (6.09 P. M. Wash. time)."

8.27 P. M. from "U. S. S. Aroostook": "Seaplanes NC-1, NC-2, NC-3 passed from sight at 2220 GMT (6.20 P. M. Wash. time)."

8.30 P. M. from "U. S. S. Aroostook": "Seaplanes NC-1, NC-3, NC-4 passed from sight on historic voyage at 2220 GMT (6.20 P. M. Wash. time)."

8.32 P. M. from "U. S. S. Aroostook": "Seaplane NC-3 left Trepassey 2204 GMT (6.04 P. M. Wash. time)."

8.41 P. M. from "U. S. S. Aroostook": "Seaplane NC-1 left water at 2136 GMT (5.36 P. M. Wash. time), on Azores leg."—(Delayed.)

8.44 P. M. from "U. S. S. Aroostook": "Sea-

plane NC-4 left Trepassey 2136 GMT (5.36 P. M. Wash. time)."—(Delayed.)

9.08 P. M. from "U. S. S. Aroostook": "Seaplanes NC-3, NC-1 left water 2211 GMT (6.11 P. M. Wash. time), on Azores leg."—(Delayed.)

9.09 P. M. from "U. S. S. Aroostook": "Seaplanes NC-4, NC-3, NC-1 left Trepassey at 2211 GMT (6.11 P. M. Wash. time), for Azores." (See 755, 752, 832. 2209 taken as official time of start by Navy Department.)

Received at 11.12 P. M. from Trepassey: "Out of sight in direction of Mistake Point at 2220 GMT. Weather conditions for Azores run good, with present wind continuing during night should reach Azores in nineteen hours. Crews in pink of condition, happy to leave on long 1372 knot run."

11.12 P. M. from "U. S. S. Aroostook": "Last night new engine placed on NC-4. All planes given complete inspection this morning, warmed and given finishing touches in early afternoon. Wind fresh West late afternoon; favorable for start. NC-3 got underway taxying at 2036 GMT (4.36 P. M. Wash. time), NC-1 got underway, taxying at 2056 GMT (4.56 P. M. Wash. time). NC-4 got under way taxying at 2113 GMT (5.13 P. M. Wash. time). NC-4 stopped all motors at 2118 GMT (5.18 P. M. Wash. time), but began taxying again, after delay of four minutes, at 2122 GMT (5.22 P. M. Wash. time). All planes taxying around harbor to warm up motors. NC-4 got off the water at 2137 GMT (5.37 P. M. Wash. time), and after circling around harbor and to the mouth of Mutton Bay, she landed in Trepassey Harbor again at 2153 GMT (5.53 P. M. Wash. time) on account of seeing other planes not yet up. All planes made a long run down the harbor three points off the wind and took off, NC-3 leading at 2206 GMT (6.06 P. M. Wash. time), NC-4 following closely at 2207 GMT (6.07 P. M. Wash. time), NC-1 in the rear at 2209 GMT (6.09 P. M. Wash. time). They were flying low and circling around point across from the mouth of Mutton Bay. Three giant planes passed out of sight in the direction of Mistake Point at 2220 GMT (6.20 P. M. Wash. time). Weather conditions for Azores run good, with present wind continuing during night should reach Azores in nineteen hours. The crews are in the pink of condition and are happy to leave on the long 1372 knot run."

11.44 P. M. from "U. S. S. Prairie": "All seaplanes passed Station No. 6 at 0205 GMT (10.05 P. M. Wash. time)."

11.50 P. M. from "U. S. S. Prairie": "Planes passed Station Ship No. 3. NC-1 passed at 2403 GMT (8.03 Wash. time), last plane passed at 0015 GMT (8.15 P. M. Wash. time)."

MAY 17, 1919

At 12.24 A. M., from naval radio station, Bar Harbor: "Intercepted at 12.10, NC-4, sending on 450 meters wave length says, 'Passed at 4.14.'"

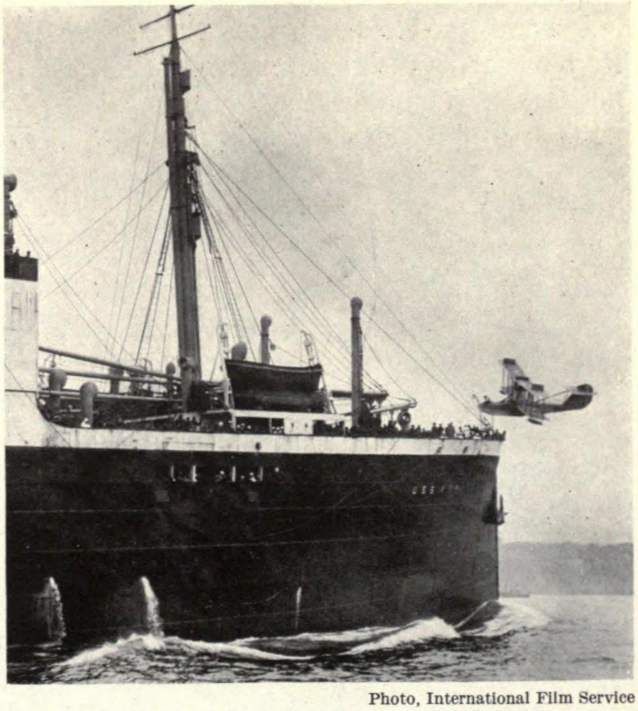
MESSAGES FROM PLANE TO PLANE

At 12.35 A. M., from naval radio station, Bar Harbor: "Intercepted at 12.26 A. M., communication between NC-4 and Cape Race radio station: 'I am receiving interference, go ahead again. Thanks.' At 12.27 heard NC-1 call Station Ship No. 9 and say, 'Answer.'"

At 12.45 A. M., from naval radio station, Bar Harbor: "Intercepted at 12.30 A. M.: 'No. 9 from NC-1, find out if that is you that we are heading for.—(Signed) NC-1.' At 12.34 A. M.: 'NC-1 from NC-4.' At 12.33 A. M.: 'No. 9 from NC-1.' At 12.35 A. M.: 'No. 9 from NC-1.' At 12.35 A. M.: 'NC-3 from NC-4—Answer.'"

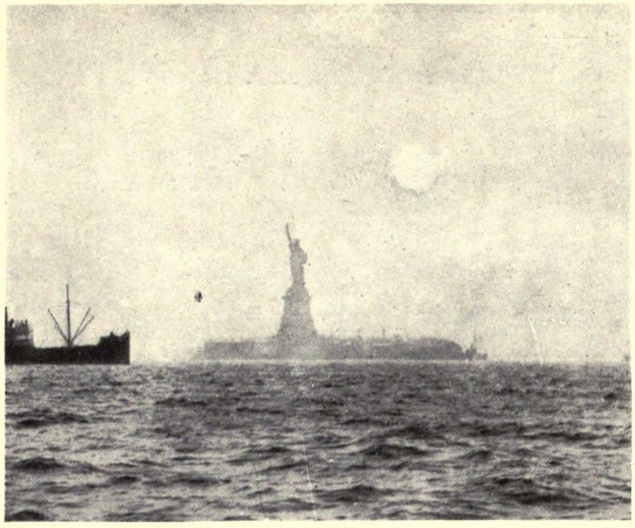
At 12.36 A. M., Bar Harbor called NC-4 on 1,500 meters wave length.

At 12.45 A. M., from the naval radio station, Bar Harbor: "Intercepted at 12.44 A. M.: 'NC-1. From what station was that I was just



Photo, International Film Service

Seaplane greets NC Flyers returning on *S. S. Zeppelin*
Naval seaplane flying over *S. S. Zeppelin*



Photo, J. H. Hare

"Home Again"

signalled to on 1,500 meters wave length?—(Signed) NC-4."'

At 12.50 A.M., from "U.S.S.Prairie": "Planes passed Station No. 2 at 23.35, G. M. T., (7.35 P. M., Washington time)."

At 1.45 A. M., from naval radio station, Bar Harbor: "Intercepted at 12.30 A. M.,: 'NC-1 from NC-4. Answer.' At 1.35 A. M.: 'NC-3 from NC-1. Answer. I have a message for you.' At 1.35 A. M., navy radio, Cape Race, from NC—: 'I have received your signals. We passed Station Ship No. 10 at about 4.50 P. M.'"

At 1.53 A. M.: "Station Ship No. 12 from NC-4: 'Make V's so that I can tell if you are near.' At 1.54 A. M., from NC-1: 'Made 15 miles and 300 degrees true.' At 1.56 A. M., from NC-1: 'Received everything O. K. I have finished my communication.'"

At 2.17 A. M., from naval radio station, Bar Harbor: "Intercepted at 2.05 A. M., 'NC-3 from NC-4, answer.' At 2.10 A. M., 'Radio Cape Race.'"

At 2.47 A. M., from naval radio station, Bar Harbor: "Intercepted at 2.16 A. M.: 'Radio Cape Race, from NC-4, received your message. Thanks.' At 2.21 A. M.: 'Radio Cape Race, from NC-1, What ship or station is that? All well here, and we are in commercial radio communication. Good morning. Cape Race, from NC-1.' At 2.20 A. M.: 'NC-3, from NC-1, Was that you?' At 2.30 A. M.: 'NC-4 from NC-1, was that 527 or 627?' At 2.36 A. M.: 'Radio Station, Cape Race, from NC-4.' At 2.36 A. M.: 'NC-1, have you heard anything of NC-4? We have just passed Station Ship 13. Signed, NC-1.' At 2.53 A. M.: 'Thanks to the 'SS. Norger'. Good wishes.'" (Same plane was calling Station Ship 18.)

SIGNALS GETTING WEAKER

At 3.56 A. M., from naval radio station, Bar Harbor: "Last heard of seaplanes at 3.21 A. M., and signals were getting weaker. However, freak work may avail itself early in the morning, and it is probable that we may hear seaplanes until 6 A. M."

At 4.30 A. M., from the "Melville", at Ponta Delgada: "Seaplane NC-4 passed Station Ship No. 14, at 7.06 G. M. T. (3.06 A. M. Washington time)."

At 5.56 A.M., from the "Columbia" at Horta: "Seaplane NC-1 passed Station Ship No. 13 at 7.13 G. M. T. (3.13 A. M. Washington time)."

At 7.04 A. M., from the "Prairie": "NC-4 passed Station Ship No. 11, at 5.50 G. M. T. (1.50 A. M. Washington time)."

At 8.45 A. M., from naval radio station, Bar Harbor: "Progress of three seaplanes from Trepassey to Azores; ahead of estimated distance 06.25 G. M. T. by 125 knots. Above time planes reported passed Station Ship 13, 6.50 knots out. Cape Race still in communication with NC-4."

At 8.58 A.M., from the "Columbia" at Horta: "NC-4 passed Station 18 at 09.45 G. M. T., (5.45 Washington time). NC-3 passed Station 13 at 06.23 G. M. T., (2.23 Washington time). NC-1 passed Station 18 at 10.14 G. M. T., (6.14 Washington time). NC-1 passed Station 16 at 09.17 G. M. T., (5.17 Washington time)."

At 9.32 A.M., from the "Columbia" at Horta: "NC-4 passed Station 11 at 12.10 G. M. T., (8.10 Washington time)."

At 9.47 A. M., from the "Melville": "NC-1 passed Station No. 16 at 09.17 G. M. T. (5.17 Washington time). NC-4 passed Station No. 18 at 09.45 G. M. T. (5.45 Washington time)."

At 10.07 A.M., from the "Melville": "Last report received, NC-4 passed Station No. 16 at 08.30 G. M. T. (4.31 Washington time). NC-1 passed Station No. 13 at 07.13 G. M. T. (3.13 Washington time). NC-3 passed Station No. 9 at 04.10 G. M. T. (12.10 A. M. Washington time)."

At 10.59 A. M. the Navy Department received a message sent from the "Columbia" at Horta at 13.25 G. M. T. (9.25 A. M., Washington time) reading: "NC-4 arrived Horta."

At 11.05 A. M., from the "Melville": "NC-4

reported sighted land at 11.35 G. M. T. (7.35 Washington time)."

At 11.06 A. M., from the "Melville": "NC-4 passed Station No. 19 at 10.14 G. M. T. (6.14 Washington time). NC-3 between stations No. 17 and No. 18 at 9.15 G. M. T. (5.15 Washington time), but off course. NC-4 passed Station No. 22 at 12.10 G. M. T. (8.10 Washington time). Weather foggy."

At 11.08 A. M., from the "Melville": "NC-4 passed Station No. 22 at 12.10 G. M. T."

At 11.10 A.M., from the "Columbia" at Horta to Naval Radio Station at Arlington: "Following message received from NC-4: 'We have picked up land again; think it is Pico.'"

At 11.11 A.M., from the "Melville": "Last information received from NC-3 at 09.15 G. M. T. (5.15 Washington time): 'We are off our course somewhere between Station 17 and Station 18.'"

NC-3 OFF ITS COURSE

At 11.12 A. M., from the "Melville": "Latest information received: NC-4 passed Station 22 at 12.10 G. M. T., (8.10 Washington time). NC-1 passed Station 18. NC-3 off course somewhere between Station 17 and Station 18."

At 11.46 A.M., from the "Prairie": "Progress of three seaplanes from Trepassey to Azores ahead of estimated distance at 06.25 G. M. T. (2.25 Washington time) by 125 knots. At above time planes reported passed Station 13, 650 knots out. Cape Race still in communication with NC-4."

At 2 P. M., from the "Melville": "NC-4 arrived at Horta this morning. Weather conditions Ponta Delgada: "Weather around islands misty, with frequent rain squalls."

At 2.10 P.M., from the "Prairie": "When considering extraordinary performance of NC planes, all on load of 1,630 gallons of petrol and six men, except the NC-3, with crew of five men, Lieutenant (j. g.) B. Rhodes, U. S. N. not taken. With Rhodes, NC-3 would have carried 185 excess of any other plane. Successful start due in large measure to tireless work of crews of seaplane plus co-operation all officers and men of Trepassey ships. Aerography most important factor. Arrangements for weather reports complete and accurate."

At 3.30 P.M., from the "Columbia," at Porta: "NC-4, at Horta, waiting for favorable weather before proceeding to Ponta Delgada. Not expected to leave until to-morrow."

At 4.43 P. M., the Navy Department received from the "Columbia" at Horta a cablegram filed at 19.30 G. M. T., (3.30 Washington time), reading: "NC-1 reported passing Station No. 20 at 12.10 G. M. T. (8.10 Washington time). Apparently for Corvo. Was forced to the surface by dense fog. Destroyers scouting the vicinity."

S O S FROM THE NC-1

At 7.07 P. M., Washington time, the Navy Department received this message from Admiral Jackson on the "Melville" at Ponta Delgada: "Received at 15.40 Grenwich mean time (11.40 Washington time) from the NC-1, 'I S W, S O S, landing now, NC-1, we want bearings. Lost in fog about position 20.' This is the latest information. Following destroyers are searching: The 'Phillip,' 'Waters,' 'Harding,' 'Dent.'"

At 7.09 P. M., Washington time, the Navy Department received this message from Admiral Jackson: "NC-3 to east of Station No. 17 at 59.1, Greenwich mean time (5.15 A. M., Washington time). Slightly off course."

At 7.17 P. M., Washington time, the Navy

Photo, International Film Service

Trans-Atlantic Flyer and wife who welcomed him home
Lieut. Commander and Mrs. Albert C. Read

Department received from Admiral Jackson: "Weather much improved. Sea visibility ten miles, but low clouds in hills. Wind shifting to northward."

At 8.46 P. M., Washington time, the Navy Department reported this message from the "Columbia" at Horta: "NC-1 forced to land at 12.19 G. M. T. (8.19 A. M. Washington time), near Corvo. NC-4 at Horta. Last news of NC-3 at 9.15 G. M. T. (5.14 A. M., Washington time), when she asked for compass signals near Station No. 18. Destroyers now searching for both planes. Destroyer 'Harding' in position latitude 39 degrees 50 minutes, longitude 30 degrees 50 minutes, on course 289, speed 22 knots, reports hearing NC-1 signals at 10.27 G. M. T. (4.27 P. M. Washington time). Signals getting stronger as approaching."

At 10.55 P. M., the Navy Department received this cablegram from the "Columbia" at Horta: "'U. S. S. Harding' reports crew of NC-1 safe on board steamship 'Iona.' Plane was being towed, but tow line parted. Latitude 39 degrees 40 minutes, longitude 30 degrees 24 minutes."

Photo, International Film Service

Lieut. Commander Albert C. Read, U. S. N., of NC-4 welcomed home
Lieut. Commander Albert C. Read, U. S. N., being welcomed by Rear Admiral Glennon on his arrival in Hoboken

MAY 18, 1919

Received at 8.54 A. M. from Admiral Jackson at Ponta Delgada:

Following received from NC-4: "Weather conditions unfavorable. Will not attempt flight this morning. 08.318 G. M. T. (4.31 A. M. Washington time)." Sent at 08.518 G. M. T. (4.50 A. M. Washington time).

Received at 9.37 A. M. from Admiral Jackson at Ponta Delgada:

"No information regarding NC-3. Have directed destroyers east of Station No. 16 to search and report." Sent at 10.418 G. M. T. (6.40 A. M. Washington time).

Received at 3.55 P. M. from Admiral Jackson at Ponta Delgada:

"Following received from 'U. S. S. Harding': 'Report plane NC-1 broken, lower planes badly damaged. Pontoon missing. Boat floating high. No serious damage apparently. 'Fairfax' will tow to Horta as soon as practicable, depending on state of sea.'" 11.518 G. M. T. (7.51 Washington time). Sent at 12.018 G. M. T., (8.00 A. M. Washington time).

Received at 4.15 P. M. from Admiral Jackson at Ponta Delgada:

"Present weather conditions westerly gale, sky overcast, visibility eight miles, sea rough. Forecast continues strong southwesterly or westerly winds to-day, becoming westerly to northwesterly and diminishing in velocity Sunday night or early Monday morning. 13.018 G. M T. (9 A. M. Washington time)."

Received at 4.17 P. M. from Admiral Jackson at Ponta Delgada:

"All available destroyers joining scouting line north from Corvo, scouting to westward. 'Columbia' directing scout line. 'Texas' and 'Florida' have been ordered to join search for NC-3. 12.218 G. M. T. (8.20 A. M. Washington time)."

Received at 4.15 P. M. from Rear-Admiral Jackson:

"Present weather conditions, westerly gale, sky overcast, visibility eight miles, sea rough. Forecast from continuous strong southwesterly or westerly winds to-day, becoming westerly, to northwesterly and diminishing in velocity Sunday night or early Monday morning. 13.018 G. M. T. (9 A. M. Washington time)."

Received at 6.07 P. M.: "No information concerning NC-3. Have directed destroyers east of No. 16 to search and report.—10.14. KNAPP."

Photo, International Film Service

Commanders and members of the crews of the Trans-Atlantic NC planes on their arrival at Hoboken from France on the transport *Zeppelin*

Received at 7.18 P.M. from "U.S.S. Columbia" at Horta:

"NC-1 right wing badly broken, pontoon carried away, elevators broken, fabric left wing ribs badly damaged. Condition of sea too rough to salvage plane. 'Fairfax' standing by awaiting better conditions. Crew of NC-1 in good shape; now on board 'Columbia' at Horta. NC-4 in good condition and waiting for favorable weather before proceeding to Ponta Delgada. Scouting line scouting to westward for NC-3. Strong northwesterly winds and rough sea prevailing. 16.118 G. M. T. (12.10 P. M. Washington time)."

Received at 6.53 P. M. from Admiral Jackson at Ponta Delgada:

"Crew of NC-1 safe on board 'U. S. S. Columbia.' 18.418 G. M. T. (2.40 P. M. Washington time)."

Received at 7.28 P. M. from "U. S. S. Columbia" at Horta:

"Strong northwest winds, rough sea, barometer steady at 29.70. 18.518 G. M. T. (12.50 P. M. Washington time)."

Received at 9.25 P. M. from Admiral Jackson at Ponta Delgada:

"Conditions Ponta Delgada, weather clearing, barometer rising, wind falling to northern. Conditions vicinity of Flores, wind 20 miles per hour. Conditions vicinity of Flores considered better from latest reports. No information received concerning NC-3. 22.108 G. M. T. (6.00 P. M. Washington time)."

MAY 19, 1919

Received at 9.58 A. M. from Admiral Jackson at Ponta Delgada:

"Following instructions received from 'Rochester': 'Use all available destroyers west of Ponta Delgada and NC-4, if practicable, to make organized search for NC-3. Sent at 08.419 G. M. T., (4.40 A. M. New York time).'"

Received at 10.02 A. M. from Admiral Jackson:

"'Fairfax' standing by NC-1, 30 miles east of Corvo. Both wings smashed, one pontoon missing. Lieutenant Commander P.N.L. Bellinger, U. S. N., reports she will not be in condition to continue flight. Sent at 08.319 G. M. T. (4.30 A. M. New York time)."

Received at 11.05 A. M. from Admiral Jackson:

"Scouting line position at 07.30 G. M. T.

Photo, International Film Service

WIVES AND CHILDREN OF NC FLYERS WAIT TO GREET AVIATORS ON LANDING

Left to right—Mrs. H. C. Richardson and daughter Margaret, Mrs. P. Talbot, Mrs. Walter Hinton, Mrs. Albert C. Read, Mrs. J. C. Montfort, Mrs. Patrick N. Bellinger, Mrs. John H. Towers, Mrs. James L. Breese, Jr. and daughter Frances

(3.30 A. M. New York time). Latitude 39.50 north, longitude 38.48 west. Course 270 degrees, true speed eight knots. Sent at 10.319 G. M. T. (6.50 A. M. New York time)."

Received at 11.44 A. M. from Admiral Jackson:

"'Stockton' has seven destroyers with her on search. Speed thirteen knots. Sent at 11.419 G. M. T. (7.40 A. M. New York time)."

Received at 11.46 A. M. from Admiral Jackson:

"Not practicable to employ NC-4 on search. She will proceed to Ponta Delgada as soon as weather permits, preparatory for flight to Lisbon. Sent at 10.519 G. M. T. (6.50 New York time)."

Received at 1.32 P. M. from Admiral Jackson:

"Wreck of NC-1 in latitude 40.08 north, longitude 29.22 west. Impossible to work until sea moderates. Boat has lost considerable buoyancy overnight and may sink in another twenty-four hours. Weather conditions unchanged. Sent at 11.319 G. M. T. (7.30 A. M. New York time)."

Received at 1.35 P. M. from Admiral Jackson:

"NC-4 will leave for Ponta Delgada as soon as weather is suitable. At present heavy squalls and rains prevailing. It is doubtful if NC-4 can start to-day. Sent at 11.510 G. M. T. (7.50 A. M. New York time)."

Received at 2.20 P. M. from Admiral Jackson:

"NC-3 sighted on water seven miles from Ponta Delgada under own power. Sent at 16.119 G. M. T. (12.10 A. M. New York time)."

Received at 2.36 P. M. from Admiral Jackson:

"Weather at noon: barometer 30.94, rising now steadily, wind west, twenty-five miles per hour. Visibility twelve miles. Moderate sea. Forecast for afternoon, generally fair with possible small local rain squall with slight increase of wind. Wind between 245 and 327 degrees and 22 to 32 miles. Sent at 12.119 G. M. T., (8.10 A. M. New York time)."

Received at 3.32 P. M. from Admiral Jackson:

"Following orders given: 'Scouting line too far west, should search to eastward with dispatch. Sent at 14.119 G. M. T. (10.10 A. M. New York time).'"

Received at 7.08 P. M. from Admiral Jackson:

"Weather at 16.00 G. M. T. (12 o'clock noon New York time), barometer 29.94 steady, wind west 30 miles, sea moderate, visibility except during local rain squalls. Forecast: wind will remain westerly, probably decreasing in force, with local rain squalls. Sent at 16.319 G. M. T. (12.30 P. M. Washington time)."

Received at the Navy Department at 7.17 P. M. from Commander J. H. Towers, U. S. N., at Ponta Delgada, for delivery to Mrs. Towers, wife of the Commander of the Trans-Atlantic flight squadron:

"Mrs. Towers, 1715 19th Street. 'Safe and well.'—(Signed) JACK."

Received at 11.04 P. M.: "NC-4 plane will leave for Ponta Delgada at 7.00 G. M. T. (3.00 A. M. Washington time), to-morrow morning, if weather is favorable."

Received at 11.08 P. M.: "Weather 8.00 P. M.: Barometer, 29.94, wind thirty T. W. M., visibility 12 miles, choppy sea. Forecast: Direction and velocity of wind will remain the same; Tuesday fair, with westerly winds, twenty to thirty miles. 21.00 G. M. T. (5.00 P. M. Washington time)."

May 20, 1919

Received at 1.15 A. M.: "If weather conditions hold, expect NC-4 to arrive at Ponta Delgada and start for Lisbon 21st or 22d. 00.52 G. M. T. (9.50 P. M. Washington time)."

Received at 4.27 A. M.: "NC-4 in Horta in good condition, weather bound. Will proceed to Ponta Delgada at earliest moment; will dispatch as soon thereafter as she is refueled and weather permits. All stations for fourth leg are covered by destroyers. NC-3 arrived at Ponta Delgada 17.50 G. M. T. (5.50 Washington time). She sailed 205 miles after landing at 13.30 G. M. T. on 17th, southwest of Pico; most remarkable exhibition of pluck, skill and seamanship. Impossible to use NC-3 for fourth leg; center engine struts badly damaged and boat leaking, personnel O. K. NC-1 landed about latitude 30–40, longitude 30–24 on 17th, personnel taken off by Greek steamer 'Ionia' on 17th, now on board 'Columbia', O. K. NC-1 total wreck, capsized and may sink before it can be towed into Horta. 22.10 G. M. T. (7.10 P. M. Washington time)."

Received at 7.52 A. M.: "Time used in sending messages is fifteenth meridian time. 09.22 (6.22 A. M. Washington time)."

Received at 9.48 A. M.: "NC-4 leaving Horta 12.40 G. M. T. for Ponta Delgada. 11.45 G. M. T. (8.45 A. M. Washington time)."

Received at 9.53 A. M.: "Barometer 29.88, rising; wind west, 20 miles, with frequent rain squalls; sea smooth, visibility between squalls 12 miles. Forecast for morning: rain squalls. 08.50 G. M. T. (5.50 A. M. Washington time)."

Received at 11.17 A. M.: "NC-4 arrived at Ponta Delgada 14.24 G. M. T., all O. K., 13.25 G. M. T. (10.25 A. M. Washington time)."

Received at 1.25 P. M.: "Intercepted by naval radio station at Bar Harbor; Carnarvon press reports that at 13.00 G. M. T. nothing yet has been heard of Hawker."

Received at 4 P. M.: General summary of situation is as follows: "NC-1 sank at sea; all personnel rescued. NC-3 at moorings in Ponta Delgada in very badly damaged condition; both lower wings wrecked, wing pontoon gone, tail badly damaged, hull severely racked and leaking badly. Is being disassembled and will be shipped to New York. NC-4 at mooring at Ponta Delgada in excellent condition and will proceed to Lisbon as soon as weather permits. All personnel in excellent condition; all very minor casualties to certain of NC-1 crew. (12.30 P. M. Washington time)."

Received at 4.24 P. M.:

"General summary of situation is as follows:

'NC-1 sank at sea; all personnel rescued.

'NC-3 at moorings in Ponta Delgada in very badly damaged condition; both lower wings wrecked, wing pontoon gone, tail badly damaged, hull severely racked and leaking badly. Is being disassembled and will be shipped to New York.

Photo, International Film Service

Secretary of the Navy Daniels, Asst. Secretary Roosevelt and the NC flyers, on the steps of the Navy Dept. Bldg., after being received by Secretary Daniels

Front Row, from left to right — Lieut. Commander A. C. Read, U. S. N. of the NC-4; Secretary Daniels; Commander John H. Towers, U. S. N., of the NC-3; Assistant Secretary of the Navy Franklin D. Roosevelt, and Lieut. Commander P. N. L. Bellinger, U. S. N., of the NC-1.
Others of the crews of the NC planes are shown in the back.

'NC-4 at mooring at Ponta Delgada in excellent condition and will proceed to Lisbon as soon as weather permits.

'All personnel in excellent condition; all very minor casualties to certain of NC-1 crew. (12.30 P. M. Washington time)'."

Received at 6.48 P. M. from Commander J. H. Towers, U. S. N., filed at Ponta Delgada at 1.40 P. M. (Washington time): "Following submitted by commanding officer NC-4: 'NC-4 took off Trepassey 10.05 G. M. T. (6.05 Washington time), May 16, following NC-3 and followed by NC-1. Separated from others at dark. Sea smooth, wind astern, about 12 knots; average altitude 800; power plant excellent. Each destroyer sighted in turn, some considerably out of position. At 17th, having passed 16 destroyers which was the last one sighted until after passing Corvo, we ran into a fog and, climbing above, up to 3,300 feet, at 11.27 G. M. T. (7.27 A. M. Washington time), we picked Flores. Then headed for and picked up destroyer 22. Weather clearing. Again encountered fog and missed 23 but picked up Fayal and landed Horta at 13.23 G. M. T., May 17th (9.23 A. M. Washington time).

'Secured astern 'U. S. S. Columbia', elapsed time being fifteen hours, eighteen minutes, and average speed 78.40 All personnel excellent. NC-4 required slight repairs, completed same day. Held at Horta by weather until May 20. Left that day at 12.39 G. M. T., arrived at Ponta Delgada 14.24, (10.24 A. M. Washington time), in good condition. Expect to leave for Lisbon May 21st, weather permitting.'"

Received at 8.21 P. M., May 20th, from Admiral Jackson:

"Weather conditions at 7.30 P. M., barometer 30.13 inches, rising continuously. Wind northwest, 10 miles. Weather fair. Visibility very good, sea smooth. Forecast: Tuesday night and Wednesday fair; wind will be between 270 and 315 degrees, 12 to 15 miles, and conditions all along the course improving."

Sent at 4.30 P. M. Washington time.

MAY 21, 1919

Received at 12.17 A. M., May 21st, from Admiral Jackson:

"Weather conditions at 11.30 P. M., barometer, 30.21 inches, rising continuously; weather fair; upper and surface winds light to moderate northwest; condition along Lisbon route improving; winds over the route generally between 1.50 and 3.30 degrees, of moderate velocity; western portion somewhat cloudy, but becoming more clear."

"Washington time, 8.30 P. M."

Received at 3.15, May 21st, A. M., from Commander J. H. Towers, U. S. N.:

"Have ordered Commander R. A. Lavender, U. S. N. and Lieutenant J. S. Sadenwater, U. S. N. R. F. to take passage on Government vessel to United States and report to Bureau of Navigation. Have ordered Boatswain L. R. Moore, U. S. N. to return to New York on 'Melville' in charge of parts of NC-3. Recommend that NC-3 be placed out of commission and that NC-1 be stricken from the navy list. Commander of the destroyer force has placed the 'Stockton' at my disposal. Request authority to proceed with remainder of personnel of NC-1 and NC-3 by 'Stockton' to Plymouth, England, to join the 'U.S.S. Aroostook', as accounts and effects of personnel are on that vessel."

"10.32 P. M., Washington time."

Received at 3.55 A. M., May 21st, from Admiral Jackson:

"Weather conditions at 4 A. M.: barometer 30.19, steady; wind light northwest; weather fair for Lisbon flight; is generally fair, with light northwest winds at the west end, gradually becoming westerly and southwesterly toward the middle on to Lisbon; velocities are between 10 and 25 miles, both at the surface and at 1,000 feet."

Received at 7.19 A. M. from Admiral Jackson:

"NC-4 will not leave to-day; one engine not functioning properly. (4.30, Washington time.)"

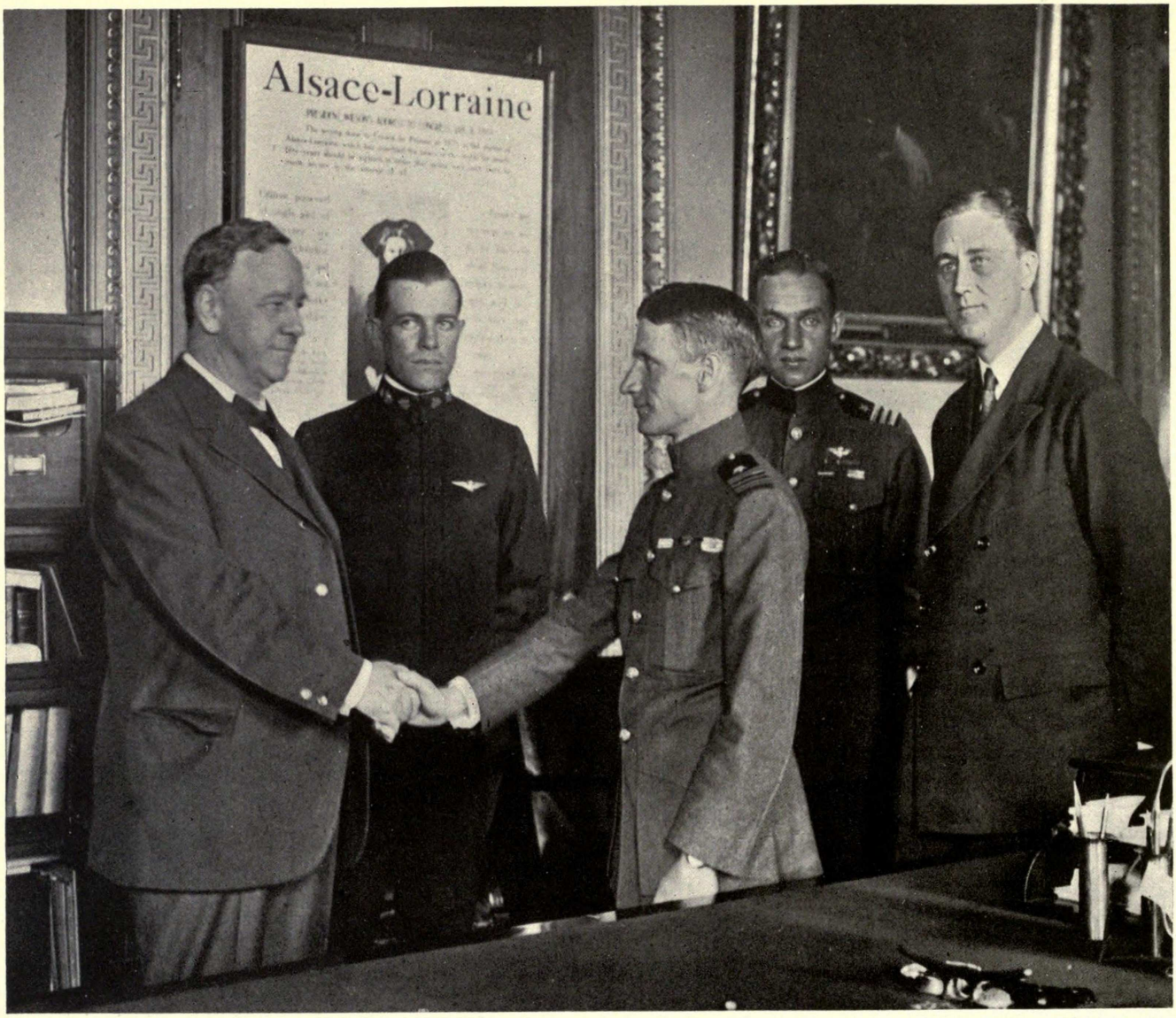
MAY 22, 1919

"NC-4 will not leave to-day. Seas too rough for start."

"Wind thirty miles south-southwest, cloudy; visibility good; sea rather rough; continuing strong southwest winds and cloudy sky Thursday; disturbance continues its eastward or northeastward course and may remove its influence from this district to-night."

MAY 23, 1919

"Barometer 30.12 inches, and unsteady. Winds to southwest, twenty-six miles. Sea rough. No indication that weather will become settled in next six to eight hours, but will probably become much better by Saturday



Photo, International Film Service

SECRETARY DANIELS CONGRATULATING LIEUT. COMMANDER A. C. READ, U. S. N., ON TRANS-ATLANTIC FLIGHT

Secretary of the Navy Daniels received the Navy's Trans-Atlantic flyers at the Navy Department in Washington, June 30, 1919. In the group from left to right — Secretary Daniels; Lieut. Commander P. N. L. Bellinger, U. S. N., of the NC-1; Lieut. Commander A. C. Read, U. S. N., of the NC-4; Commander John H. Towers, U. S. N., of the NC-3; and Asst. Secretary of the Navy, Franklin D. Roosevelt.

morning. Southwest winds twenty to thirty miles, and probable wind squalls to-day."

MAY 27, 1919

Received at 8.20 A. M.:

"NC-4 left Ponta Delgada for Lisbon at 10.18 G. M. T. (6.18 A. M. New York time), to-day. Sent at 10.527 (7.50 A. M. New York time)."

Received at 8.58 A. M.:

"NC-4 passed Station Ship No. 1 at 11.13 G. M. T. (7.13 A. M. New York time). Sent at 10.227 (7.20 A. M. New York time).—(Signed). JACKSON."

Received at 9.01 A. M.:

"Weather report, 8 A. M.: Flying conditions from Ponta Delgada to Lisbon very good. To-day fair weather and moderate to fresh southwesterly winds at flying altitude prevail over the entire course, with the barometer rising slowly. Weather clearing and wind nearly west. Favorable flying conditions should continue over Wednesday. Sent at 08.427 (5.40 New York time).—(Signed) JACKSON."

Received at 9.10 A. M.:

"NC-4 passed Station Ship No. 2 at 11.38 G. M. T. (7.38 A. M. New York time). Sent at 10.4927 (7.49 New York time). — (Signed) JACKSON."

Received at 10.10 A. M.:

"NC-4 passed Station Ship No. 4 at 12.54 G. M. T. (8.54 A. M. New York time). Sent at 12.027 (9 A. M. New York time).—(Signed) JACKSON."

Received at 11.05 A. M.:

"NC-4 passed Station Ship No. 5 at 13.35 G. M. T. (9.35 A. M. New York time). Sent at 12.527 (9.50 A.M. New York time).—(Signed) JACKSON."

Received at 11.07 A. M.:

"NC-4 passed Station Ship No. 6 at 1400 G. M. T. (10.05 A. M. New York time). Sent at 13.027 (10.00 A. M. New York time).—(Signed) JACKSON."

Received at 12.15 P. M.:

"NC-4 passed Station Ship No. 7 at 14.40 G. M. T. (10.40 A. M. New York time). Sent at 13.527 (10.52 A. M. New York time).—(Signed) JACKSON."

Received at 12.16 P. M.:

"NC-4 passed Station Ship No. 8 at 15.16 G. M. T. (11.16 A. M. New York time). Sent at 14.227 (11.22 A. M. New York time).—(Signed) JACKSON."

Received at 1.08 P. M.:

"NC-4 passed Station Ship No. 9 at 16.18 G. M. T. (12.18 P. M. New York time). Sent at 15.227 (12.22 P. M. New York time).—(Signed) JACKSON."

Received at 2.33 P. M.:

"NC-4 passed Station Ship No. 11 at 17.10 G. M. T. (1.10 P. M. New York time). Sent at 16.327 (1.30 P. M. New York time).—(Signed) JACKSON"

Received at 3.57 P. M.:

"NC-4 passed Station Ship No. 12 at 18.50 G. M. T. (2.05 P. M. New York time). Sent at 17.227 (2.20 P. M. New York time).—(Signed) JACKSON."

Received at 4.28 P. M.:

"NC-4 passed Station Ship No. 13 at 18.38 G. M. T. (2.38 P. M. New York time). Sent at 18.027 (3 P. M. New York time).—(Signed) JACKSON."

Received at 4.46 P. M.:

"NC-4 passed Station Ship No. 14 at 19.16 G. M. T. (3.16 P. M. New York time). Sent at 18.327 (3.30 P. M. New York time).—(Signed) JACKSON."

Received at 8.09 P. M. from the commander of the United States naval forces in France:

"NC-4 arrived at Lisbon at 20.02 G. M. T. (4.02 P. M. New York time).—(Signed) HALSTEAD."

MAY 30, 1919

Received at 12.58 A. M. from Admiral Knapp at London:

"NC-4 expects to leave Lisbon for Plymouth at 06.00 G. M. T. (2 A. M. Washington time) Friday."

Received at 4.55 A. M. from Lisbon:

"NC-4 left Lisbon for Plymouth at 05.24 G. M. T. (1.24 A. M. New York time).—(Signed) CUMMINGS."

Received at 5.30 A. M. from Admiral Knapp at London:

"NC-4 leaves Lisbon for Plymouth, May 30, 05.00 G. M. T. (1 A. M. New York time)."

Received at 7.05 A. M. from Admiral Knapp at London:

"NC-4 left Lisbon for Plymouth at 02.30 G. M. T. (time probably 05.230 G. M. T. or 1.24 New York time)."

Received at 7.07 A. M. from Admiral Knapp at London:

Rush following from "U. S. S. Aroostook":

"NC-4 passed Station A, but Rathburn has not sighted yet; sea smooth, 08.130 G. M. T. (4.10 A. M. New York time)—(Signed) KNAPP."

(This message was filed at 09.430 G. M. T. or 5.40 A. M. Washington time).

Received at 10.42 A. M. from Admiral Knapp at London:

"Rush, double priority, for 'Rochester.' Following intercepted from 'U. S. S. Harding' to 'U. S. S. Woolsey': 'NC-4 at Mondego River. Must wait high tide. Seaplane O. K. Cannot make Plymouth to-night. Request destroyers keep station. What is best port to north to land seaplane within 300 miles? Request report to Comfran (Commander U. S. Naval Forces in France) and Plymouth'—(Signed) READ."

Received at 10.49 A. M. from Admiral Knapp at London:

"Following intercepted from 'Rathburn' to 'Woolsey': 'Have not sighted NC-4. Am searching to southward of position B. 08.30 G. M. T. (4.30 A. M. New York time).'"

Received at 10.50 A. M. from Admiral Knapp at London:

"Rush following from 'U. S. S. George Washington'. Following message intercepted from 'Woolsey' to 'Tarbell to 'Yarnell' (destroyers): 'Maintain stations. NC-4 on her way 09.430 G. M. T. (5.40 A. M. New York time).'"

Received at 3.05 P. M. from Admiral Knapp at London:

"NC-4 landed Mondego River, all well. Will proceed at high tide to arrive probably Vigo or Ferrol to-night, and proceed on to Plymouth to-morrow, weather permitting. 12.330 G. M. T. (8.30 A. M. New York time)."

Received at 3.15 P. M. from Admiral Knapp at London:

"Rush. Double priority. Following intercepted by 'George Washington' intercepted from 'Rochester' to 'Stockton': 'Rush. NC-4 at Mondego River, but will continue flight to-morrow. Remain on station 19.' 12.230 G. M. T. (8.20 A. M. New York time)."

Received at 3.41 P. M. from "Dorsey," Lisbon:

"From 'Shawmut': 'NC-4 made forced landing in Mondego River. Undamaged. Cannot make Plymouth to-day. Make Vigo Bay. 12.530 G. M. T. (8.50 A. M. New York time) —(Signed) CUMMINGS'."

This message was sent by "Dorsey" at 14.25.30 G. M. T., or 10.25 A. M. New York time.

Received at 5.38 P. M. from "Dorsey" at Lisbon:

"NC-4 left Figueira for Ferrol at 1.28 G. M. T. (9.28 A. M. New York time)." This message was sent at 16.0830 G. M. T. (12.08 New York time).

Received 4.35 P. M., from commander of destroyer "Force," at Plymouth:

"NC-4 landed Mondego River. All well. Will proceed at high tide, to arrive probably at Vigo or Ferrol to-night and proceed on to Plymouth to-morrow, weather permitting. 28.30 G. M. T. (8.30 N. Y. time)."

Received at 7.45 P. M. from Admiral Knapp at London:

"Following radio relayed to 'Gridley,' from commander destroyer 'Force,' 'Stockton' to 'Shawmut,' via 'Harding,' 'Gridley' or 'Mathean': 'NC-4 landed in Mondego River, and will probably proceed to-day to Vigo or Ferrol. Proceed to port NC-4 arrives at and assist. 12.330 G. M. T. (8.30 A. M. New York time)'."

Received at 8.00 P. M., from Admiral Knapp at London:

"Following radio relayed from commander destroyer 'Force': 'NC-4 landed for to-day, but will continue flight to-morrow. 'Arkansas' remain on station. 12.330 G. M. T. (8.30 New York time)'."

The latter message was sent by Admiral Knapp at 15.25 G. M. T., or 1.25 P. M. New York time.

The following radio received, origin not known: "NC-4 arrived Ferrol 16.45 G. M. T. (12.45 Washington time). 'Harding' and 'Tarbell' standing by to render assistance 'Woolsey.' Will detail destroyer to relieve 'Harding' on Station 1. 17.030 G. M. T. (1.00 P. M. New York time)." Despatch was filed by Admiral Knapp at 19.130 G. M. T. or 3.00 P. M. New York time.

MAY 31, 1919

Received at 1.21 A. M. from Plymouth:

"NC-4 left Lisbon 06.23 G. M. T. (2.23 A. M. New York time), May 30, and landed Mondego River, getting under way later, and proceeding to Ferrol, where it landed at 16.45 G. M. T. (12.45 New York time). Destroyers standing by. NC-4 will proceed Plymouth to-morrow, if weather permits."

Received at 6.50 A. M. from Admiral Knapp at London:

"From the 'Harding': 'U. S. S. Gridley' to 'U. S. S. Rochester': 'NC-4 expects to leave Ferrol for Plymouth at 6 A. M. to-morrow.'—(Signed) READ, 20330."

Received at 7.22 A. M. from Admiral Knapp:

"NC-4 left Ferrol at 06.27 G. M. T. (2.27 A. M. New York time)."

Received at 8.11 A. M. from Admiral Knapp:

"Following received from 'U. S. S. George Washington': 'From 'U. S. S. Stockton': NC-4 passed Station 2 at 07.43 G. M. T. (3.43 New York time)'."

Received at 9.24 A. M. from Admiral Knapp:

"NC-4 passed Station 4 at 0906, G. M. T. (5.06 New York time)."

Received at 9.50 A. M. from Admiral Knapp:

"NC-4 arrived at Plymouth at 14.26.31 English civil time, or 9.26 A. M. New York time."

Received at 11.36 A. M. from Admiral Knapp:

"NC-4 probably passed Station 5 at 10.05."

Received at 11.56 A. M. from Admiral Knapp:

"NC-4 passed Mengam at 12.13, local time."

Received at 3.15 P. M. from Admiral Plunkett, commander of destroyer force at Plymouth:

"NC-4 arrived at Plymouth 13.24 G. M. T. (9.24 A. M. New York time), in perfect condition. Joint mission of seaplane division and destroyer force accomplished. Regret loss of NC-1 and damage to NC-3. Nevertheless, information of utmost value gained thereby. Has Department any further instructions?"

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